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A MONTHLY JOURNAL

OF

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EDITED BY

HORATIO C. WOOD

AND

ROBERT MEADE SMITH.

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Original Communications.

MONOMANIA.

A Clinical Lecture, delivered at the Philadelphia Hospital.

By H. C. WOOD, M.D., LL.D.*

[Reported by WILLIAM H. MORRISON, M.D.]

GENTLEMEN,—The subject of to-day's lecture is monomania. This term literally means one mania. It was originally proposed by the great alienist Esquirol, who

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employed it to signify a condition of exalta-tion in which the patient was in a perpetual and chronic state of high spirits, with exces-sive mental and emotional activity. If the term monomania were used with this mean-ing we should include under it cases which really belonged to chronic mania in its mildest type. We should also find that those cases which might be included under monomania would sometimes pass from this condition of excitement to one of depression. The term has been used by different alienists with almost every conceivable meaning. In these lectures I shall use it to cover a very large class of chronic insanities in which the insane condition is limited, at least in its marked manifestations, to certain portions of the

brain-functions. The term monomania, thus limited, covers those cases which are commonly termed cases of partial insanity, in which one function of the mind is either almost solely or most markedly affected. The best scientific definition of monomania that I know of is that given by Spitzka. He says, "Monomania is a chronic form of insanity, based on an acquired or transmitted neuro-degenerative taint, and manifesting itself in anomalies of the conceptional sphere,—*i.e.*, the sphere of thought,—which, while it does not destroy entirely the mental mechanism, dominates it." This definition is, I think, scarcely wide enough. I believe that the term monomania should include not only those cases in which the intellectual or conceptional sphere is involved, but also those in which the emotional condition is affected. There are, as you know, certain passions, such as avarice, envy, vanity, and so on, which are really as much cerebral functions as is the reasoning power itself. There are cases in which these emotions become so magnified in their power that they dominate the whole individual. As an example may be taken the miser, in whom that portion of the brain whose functional activity is connected with avarice has become so excessively active that it subjugates entirely the ego. An old gentleman who resided in this State in early life had thoroughly well educated and taken care of his family. His wife died, and he then became more and more queer and more and more poverty-stricken, so that he scarcely provided his daughters with the necessities of life. He was taken care of by an old colored woman, whom he had bought for very little. His children were clad in the coarsest clothing, and, as I have said, scarcely received sufficient food. The old man eventually died, and fifteen thousand dollars in gold was found under his pillow. Every day he had crawled out of bed early in the morning and hid this bag of gold in a certain part of the room, and after the bed had been made would crawl back and put it under the pillow. Securities were also found amounting to hundreds of thousands of dollars. Avarice had become so overweening that it was beyond the power of the patient to control it. It is perfectly parallel to the appetite which is engendered for strong drink. The man first drinks through the will; but there frequently does develop a condition of the nervous system in which the power of the brain is so lowered and influenced by the long-continued habit that the man is a monomaniac as regards drink. The

thirst for alcohol absolutely dominates him, and is entirely beyond his power to control. It is, of course, a very difficult matter,—and it may be in individual cases impossible,—for us to draw the line between sanity and insanity,—*i.e.*, between the condition in which the patient could, if he would, control the appetite, and that in which the power of self-control is really lost; but assuredly the difficulty of drawing the line ought not to cause us to reject these cases of emotional disorder as belonging with the insanities. Did we not at our last lecture on melancholia learn that a general depression of spirits may be for a time the sole evidence of an insanity? And if what may be considered a generalized emotional disturbance marks general insanity, surely a particularized emotional disturbance, such as exists in the miser, may mark particularized insanity,—*i.e.*, monomania.

The difficulty of decision exists in all forms of monomania. Let me cite you a case from my experience.

Several years ago I was called to a palatial mansion, and I was met in a boudoir by a handsome young wife, quiet, perfectly lady-like, and self-restrained in her manner. She said to me, "Doctor, I have sent for you under very painful circumstances, because I feel that I must confide in some one." She then went on to say that she had syphilis, and that this had been given to her by her husband, and that she had had a child born in a certain watering-place, and that it had died from hereditary syphilis. She further told me in detail of having personally detected her husband's infidelities. I examined the woman thoroughly, but could not find the slightest evidence of specific disease. I finally wrote to the physician who had attended the woman at the birth of the child. He at once replied that the child was well formed and perfect, and that it had died from an ordinary acute infantile disease. I then assured the woman that she had not had syphilis. She expressed herself as much relieved, but was unrelenting towards her husband, who she said kept a mistress, and frequently annoyed her by communicating with said mistress at places of amusement where they were together, and by having said mistress to drive immediately behind them in the park. She had detectives employed to watch her husband, and had a well-known lawyer engaged to superintend the detectives. After this had gone on for some weeks, I began to suspect that there was something wrong with the woman's brain, and to watch her.

To make a long story short, my patient watched her husband more and more closely, spent hundreds of dollars, and at last one night at a theatre pointed out as the paramour of her husband a lady who was well known and entirely beyond suspicion. The whole of her story was undoubtedly invented, although she herself believed it. Her husband, however, believed that she was full of the devil and wanted to torment him. She was all the time acting against her own interest. She could have obtained anything from her husband if she had acted in a decent manner towards him. There was nothing to be done in the case. The couple were sent to Europe, but the same condition remained, and they finally separated. This was undoubtedly a case of well-formed monomania, in which the woman's intellectual powers, except in this regard, were perfect. She mingled in society, reasoned well, and did everything well, but she had this delusion, by which her whole life was altered. I found in that case, as is found in most cases of monomania, that clear back to childhood there had been evidences of something not quite right with the cerebral functions. The woman had always been extremely vain, wildly ambitious to shine in fashionable society, and with a marked excess of egotism. These are characteristics which frequently precede the evidences of monomania. This was well exemplified in the history of Guiteau.

Although Esquirol used the term monomania as belonging to those cases in which there was an excess of animal spirits and of the emotions, such as ambition and anger, which are related to aggressiveness and power, there can be no doubt that there are two distinct classes of monomaniacal persons,—those in which there is a condition of emotional exaltation, and those in which there is a condition of emotional depression. In other words, precisely as in general insanity we have two types of cases, represented by mania and by melancholia, so do we have in this monomania, or partial or limited insanity, two classes of cases, the one corresponding to general insanity with emotional exaltation, and the second corresponding to general insanity with emotional depression.

I have already expressed the opinion that monomania may exist without the presence of a delusion and be purely emotional. At the same time, in most cases, sooner or later there comes a distinct delusion. Some writers say that the character of the delusion is dominated by the character of the emotional disturbance. Others say that the character of

the emotional excitement is the result of that of the delusion. For instance, a man who imagines that he is the Czar of all the Russias is, by the very belief itself, kept in a perpetual state of exaltation, while a man who believes that he has committed the unpardonable sin is by his belief thrown into a state of deep depression. I do not believe that the delusion produces the mental state always, or that the mental state produces or dominates the character of the delusion. It seems to me that all that can be said is that these two things are correlated, and that a condition of mental depression tends to delusions of persecution and delusions of a depressive type, and that in a condition of emotional exaltation the delusions partake of this general character.

The delusions of monomania, like the delusions of ordinary general insanity, often grow out of something having a real existence. A melancholic or hypochondriacal monomaniac may have some bad feeling, which is increased in his mind until it dominates his whole life: thus a dyspeptic symptom leads him to the belief that he has no stomach. These cases are to be distinguished from the cases of hypochondriacal melancholia by the fact that the delusion is "systematized." The systematized delusion, you will remember, is one said to be characteristic of monomania, and is one about which the patient reasons, and which he defends.

As an example of this let me cite a case which recently came to my notice,—that of a gentleman, now dead, who was at the time a colonel in the United States Army. This case also well illustrates how closely monomania relates itself to sanity, and how difficult it sometimes is to draw the line, and to convince others, especially those who have no medical training, where the line is to be drawn. This man was, at the time I speak of, stationed at one of the frontier posts of the country, and was performing, with satisfaction to all, the duties appertaining to his rank. One day he said to a friend, "My life in this frontier post, from its monotony, would be absolutely unsupportable if it were not for my daily mail which I get from my dead friends. I had a letter from your brother last week, and every morning I live in expectation of receiving a letter from some deceased friend or relative." He was asked how the letters came, and it was learned that they were received through a certain living medium in the eastern part of the United States. This lady would almost daily write a letter to this man, which was

received by him with absolute credence as coming through her from the spirit world. We come right here upon the delusions of spiritualism, and we come to a class of cases in which it is very difficult to say where sanity ends and insanity begins. In matters of religious belief, every man who believes strongly in a certain faith might consider every other person who believes in a different faith to be insane. Profound belief in the daily presence of spirits may coexist with great scientific or business acumen.

Although it seems impossible to fix a line which shall separate a sane from an insane religious trust or belief, it can hardly be doubted that many of the devotees of spiritualism ought to be considered as monomaniacs. Let me refer again to the colonel I spoke of a moment ago. On one occasion he said, "There is one thing that gives me great comfort, and that is that I am a descendant from the Virgin Mary." Some one intimating a doubt of that genealogy, he continued, "I know that I am a descendant of the Virgin Mary, because I had a letter from her, and she says so, and she certainly ought to know." Can we hesitate in deciding that here was a delusion which was thoroughly systematized and logically defended by its holder? The first premise, that he received letters from the spirits, was false, but his reasoning based upon it was sound.

Another case which came under my notice a year or two ago was very interesting, and also illustrates the difficulty sometimes met with in drawing the line. It was that of a lady who saw visions. If a person sees a vision, and recognizes that it is a vision and does not believe that it has a real existence, that person is not insane; but when a hallucination so takes hold of the mind of a person that he is convinced of its reality against the evidences of touch, that person is insane. This lady of whom I have spoken sat in my office, and, pointing to a particular part of the room, said, "There is a stick rising up: it grows out, and now it has on it the head of a big bull-dog." She then went on to describe its heavy, sensual, hanging jaw, vicious expression, etc. She said that she knew that there was no bull-dog there, that she simply saw it as a vision. Then she went on to state that she knew what this meant, that the vision was sent from the other world as a symbol of something that was past. She said, "That bull-dog is given a resemblance to a certain doctor, now dead, whom I once knew. He was a coarse, heavy, sensual man, and this

vision is sent to me to show that his disembodied spirit still holds to the mould of its earthly tabernacle." That woman understood that the thing which she saw had no real existence, and you would at once say that she was sane, but yet she evidently was insane, because she believed that the vision was sent to her as a symbol of something else. She also had all sorts of ideas about a presence at night. She would be awakened out of sleep with a horror and fear that a spirit was behind her. She would at times get out of bed and pray for hours that she might be rid of this presence, which she believed to be the spiritual essence of the devil sent to torment her. She was clearly over the line.

I shall now bring before you some patients suffering with monomania. The first patient is Miss P.

"I understand, Miss P., that you have had a remarkable life. Will you tell us something of your past history?" "Do you mean my personal history?"

"Yes. Tell us something about your life." "When I was brought here I was kidnapped. I was not examined at all. Ever since I was poisoned, which is seven years ago, I have been trying to earn my own living, but there have been parties determined to ruin me. I have not succeeded in getting work because somebody always opposed me. I look upon it as the work of political parties on account of my father's belief."

"What about your ancestry?" "That is what they want to find out. My father was a Stuart, but there are different branches and they are not sure which house it is. There was a mistake made in raising the children and bringing them up among others. This was during the Revolutionary War. My parents lived about the time of the War of 1812. As far as I can make out, both my grandparents lost their lives in this war, and the children were raised among others. The cousins wanted to force me to become one of them, especially one of the Martha Washington descendants. She is determined that I shall live with her, and I can recall many things that she has done with this object."

"Who was it that tried to poison you?" "The party that was implicated said that they wanted to destroy my intellect, but not my life. Something was said about an insane asylum. That was the woman Morris, who is a descendant of one of the parties born on the American side. She is really one of the Marys, and is one of the Jersey links. It is just a fight between some of the American

links and the other links. I am a connecting link between two contending parties. They both have about equal rights."

"Are you happy or unhappy?" "I am naturally buoyant and spirited, but I have passed through a great deal of trouble." (The patient was now removed.)

Gentlemen, you there see an example of what I mean by a thoroughly systematized delusion. That woman argues and reasons about her delusion. You see also that the delusion is not dominated by the emotional condition. She has a mixed delusion. She has a delusion of persecution and a delusion of exaltation. She believes that she is something great, and even has a chance for a throne. That is a delusion of exaltation. She also believes that she is persecuted because of her greatness: thus she has the delusion of persecution grafted upon a delusion of exaltation. The woman's mental functions, disconnected from her delusions, are fairly well performed.

I shall now have a patient brought in who believes that he is Melchizedek the high-priest and prophet.

"Well, C., how are you feeling?" "First-rate."

"You look healthy." "I should like to travel around; I would not mind taking a trip to Harrisburg."

"I see that you have lost your sight; how did that happen?" "I was born with cataracts."

"Does that interfere with your seeing visions?" "Not as I know of. I don't think so. I expect to see a vision of the Lord to-night."

"Have you had such a vision lately?" "Yes. A few nights ago."

"Tell us about it." "The Lord appeared to me in great splendor, in a fiery flame, with a shining face. Take, for instance, that young man sitting up there. What kind of an establishment is this?"

"This is the lecture-room." "Is that so?"

"What did the Lord say to you?" "The Lord appeared unto me and said, 'I am the Lord, thou art my servant.' The institution authorities think I have given up what they call foolishness; but I am still a prophet. I would not object to taking a trip to Harrisburg for my health."

"Are you perfectly well?" "Yes, I believe so."

"Are you perfectly happy?" "Not at present time. I want to be where I can hear the conductor say, 'This train for the east.

Change cars for Harrisburg,' or some other point."

"Do you really see the Lord, or do you only imagine it?" "It is as true as I am sitting here."

"Does he ever touch you?" "No. The Lord does not treat people that way. He stands at a distance, in human form; sometimes just a fiery flame." (The patient was now removed.)

There you see the condition of exaltation with no depressive delusions. You see also that the hallucination goes as far as hearing and seeing, but does not affect the sense of touch.

The next case illustrates a depressive delusion. It is of the melancholic type.

"G., where were you born?" "At Argyle, England."

"Are you married?" "Yes; I have been thirty years."

"What is your business?" "Bricklayer."

"Do you think that you could lay bricks now?" "Yes, I could work, although I have been badly used."

"What have they done to you?" "I have been strangled four times in my sleep. They were trying experiments on me, for what reason I do not know, unless it is because my wife has been here. There are other parties concerned in it."

"Have you seen your wife?" "Yes, I saw her and three others."

"When did you see her last?" "It is about three weeks since I saw the one I took to be my wife. I hear her frequently down-stairs. She has been detained. I hear her sometimes on one side of the hospital and sometimes on the other. Before I came here somebody got into my house and chloroformed me and got at my wife." (The patient was now removed.)

This man probably could work as well as ever, except as his attention was drawn from his work by his delusion. He believes that his wife is perpetually attacked by people, and that she is confined down-stairs. This man represents a very dangerous class. His mental functions are sufficiently perfect to carry out any scheme which may come from his delusion of persecution. He may fasten his delusion on some one and make a violent assault on that party. If this man believed that it was John Jones who had chloroformed him and ill-treated his wife, he would be very likely to assault John Jones. This is practically the most dangerous class of lunatics, and it is the class which is, perhaps, least frequently recognized as crazy.

In concluding this lecture I want to say a few words in regard to the relations between this form of insanity and high intellectual power, and especially with reference to genius. There can be no doubt that a large proportion of those who are considered as the most pronounced examples of genius are cases whose intellects are forever on the border of insanity. To say that an individual is a genius usually means that he has a certain function of the mind exalted high above the other functions. A man whose imagination is developed out of proportion to his reasoning faculties is apt to be a poet or a novelist, and produces works which may live through centuries. Such a man is above his fellows, not by virtue of great brain-power, but because his brain takes a certain limited direction. A man who is dominated by his imagination is always in danger of being swept off his feet by the rush of his imagination. A genius is recognized as a man not practical. By a man not practical is meant one lacking in common sense; and common sense is, after all, nothing more or less than the term used to express good judgment in the ordinary matters of life. A man who has great imagination usually lacks reasoning power, and is not practical, because of his great imagination. One of the best examples of the relation between great imaginative power and monomania is John Bunyan, the author of "The Pilgrim's Progress," which, according to any standard that we have a right to set up, is one of the five or six greatest books in the English language. It is certainly more read than any other book, with the exception of the Bible. No one who reads the history of Bunyan's life can doubt for a moment that he suffered from monomania with depressing delusions. He, however, finally recovered.

Another remarkable instance of the close relationship between insanity and genius is afforded by the famous Victor Hugo. His uncle died insane; his brother, Charles Hugo, in his late boyhood gave promise of remarkable talent for literature, but before twenty he became insane, and finally passed into a condition of complete dementia. One of the daughters of Victor Hugo is now and has been for many years living in an insane asylum. According to the London *Medical Times*, there are in many of Hugo's finest productions numerous passages which could only have been conceived by a diseased imagination, and are indelibly stamped by madness. A remarkable fact in the mental history of

the great French poet is that along with his great imagination there was a shrewdness almost as remarkable. No banker could have more carefully managed his fortune; no politician could have more tenderly nursed his popularity. He who had amassed over a million of dollars died the idol of a communistic democracy; he who had played at fast and loose with all political parties was buried amidst a tumult of universal sorrow.

The prognosis in monomania is exceedingly unfavorable. This is because the condition is so often the result of a faulty formation of some part of the brain. There is a peculiarity of the cerebral organization which shows itself from the very first.

*GENU VALGUM, AND ITS TREATMENT
BY MACEWEN'S OPERATION.*

BY I. FLETCHER HORNE, F.R.C.S.*

RICKETS holds the foremost place in the production of this deformity. The two chief factors of rickets will be found to be improper food and insufficient clothing, so that among the children of the poor, where the supply of these necessities to the physical well-being is often in inverse ratio to the demand, we find rickets and its resulting deformities rampant.

Genu valgum may exist at birth, or may originate in fast-growing children from want of mother's milk; the non-rachitic form showing itself often during convalescence subsequent to measles, whooping-cough, and scarlet fever, also during the fast-growing period of approaching puberty. We may also see considerable in-knee in robust, tall, overstout, and overgrown adults, height and weight having both contributed to it. In-knee is accompanied for the most part by a relaxed condition of the ligamentous system in general, and is usually preceded by flat-foot.

The ligaments, especially on the inner side of the ankle and those on the sole of the foot, having yielded, the arch of the foot becomes flattened and the foot itself everted: the inner malleolus projects inwards and is lowered, the shaft of the tibia then inclines outwards, the long axis of the femur becomes inclined inwards, the inner condyle protrudes, the internal lateral ligaments yield to the superincumbent weight, and therefore the weight of the body is no longer borne in a

* Surgeon to Beckett Hospital, Barnsley, England.

vertical line and transmitted through the long axis of the femur to the arch of the foot. The femur being thus inclined inwards and the tibia outwards, the condyle of the femur necessarily assumes an oblique position from without inwards.

In its commencement genu valgum is only apparent in the erect position, and is not seen in the horizontal. After some time it becomes permanent; but even whilst the bones are soft, although altered in shape and the internal condyles lengthened, these cases may still be treated by suitable splints. But when the bones have become hard,—and they do in some cases become abnormally hard, almost as ivory,—osteotomy is required.

It is the treatment of the more severe cases, those of children over 10 years of age and adults, to which I would call attention. I think it may be laid down as an axiom that when the structures of the limb have lost their elasticity, the bones consolidated, and impairment of size of the external condyle and the opposite articulating surface of tibia is considerable, and where the patella has left its natural groove and is found outside of the external condyle, and adult age is near at hand, osteotomy is required. I prefer the supra-condyloid osteotomy, as recommended by and named after Macewen, of Glasgow.

A short and ready way to a goal has many attractions, and not the least of the anticipated advantages consists in the saving of time and the appearances of the limb, especially in adults. We must not forget that considerable curvature of the thigh is not incompatible with comfortable use, still I think I may venture to promise, after operation, improved appearance, addition to the height, and, after a time, increased usefulness of the limbs. Aided by the adoption of the quasi-subcutaneous principle, and the beneficent influence of antiseptic dressing, osteotomy for the cure of genu valgum has become one of the most satisfactory operations in surgery.

The operation is done under the steam-spray, Esmarch's bandage being applied to the whole length of the limb to a little above the place of incision. The limb is now placed on a sand-pillow, or, better, a cylindrical wooden block, since the latter offers more resistance, and sand-bags are objectionable in antiseptic operations, to afford an unyielding surface, against which the chisel will act with greater effect. An incision is made one finger's breadth above the tubercle of the adductor magnus muscle on the inner side of the femur; the

incision made is one and a half inches long, down to the bone, being parallel to the femur. The chisel is then introduced, first longitudinally, until it reaches the bone, then turned transversely, and, in cutting the posterior inner part of the bone, should be directed from behind forward so as to cut away from the femoral artery, which passes through the aperture of the adductor magnus above the seat of the operation. From this position the chisel is made to move forwards along the inner border until it comes to the anterior surface, when it is directed from before backwards and towards the outer posterior angle of the femur. When the bone is divided about two-thirds through, the limb is grasped by one hand of the surgeon above the wound, the other holding the leg, and by the use of a little force the bone snaps. The elastic bandage, used to restrain the bleeding, is now removed and any little bleeding points taken up, a pad of gauze is placed over the wound and the splint applied.

The splint Macewen uses is a modification of the half-box, the outer portion being carried up like a long splint to about the third or fourth rib, and it projects beyond the posterior splint at the foot; this projection is fixed in the clamp of a bed-rest, and so the whole splint and limb are kept perfectly firm. The back-piece originally used curved laterally, but I believe now Dr. Macewen has taken to a flat one. I have used both, and I find the flat piece keeps the limb in better position. The thigh and knee are fixed to the outside splint, while the lower limb and foot are thrown inward by abundant padding.

Dr. Macewen says, "If the temperature remains about normal, if there be little pain and absence of discharge, the limb ought not to be touched for a fortnight, at the end of which time the dressing may be removed, when the wound will be superficial and partly covered with epithelium."

The mallet used is of steel; the chisel, or osteotome, used was Macewen's, with blade and octagon handle in one piece, and furnished with a rounded projecting head. The blade is bevelled on both sides so as to resemble a very slender wedge; it is marked in half-inches so that the thickness of the bone can often be ascertained, and thus the distance predetermined. Dr. Macewen recommends three sizes of chisels, but in my hands one has answered well for all my cases.

CASE I.—T. D., aged 9, admitted to Beckett Hospital from the Union Workhouse with double in-knee, the feet separated twelve

inches when he stood erect, and he walked very awkwardly.

January 9, 1885.—I performed Macewen's operation on right leg with antiseptic precautions; no hemorrhage. The dressing first removed January 26; there was slight suppuration and a slight superficial slough.

February 24.—The splints were removed. On measuring the limb from the anterior spinous process to the inner malleolus, the right leg measured twenty-two inches, the left twenty-two and one-half inches; the right leg was put into plaster of Paris bandage. February 27 the patient was again put under ether, and with the spray and antiseptic precautions the operation was performed on the left leg; there was no hemorrhage; the wound was dressed with McGill's silk.

February 28.—Slight rise of temperature, reading 100° F., but afterwards throughout the case the temperature was normal. The wound was dressed March 26, when there was good union; the limb was put up in plaster of Paris bandage.

June 19.—Discharged. The boy can walk with the aid of crutches; the legs are equal length and straight.

November 19.—I saw the patient to-day; the legs have not shrunk, are perfectly straight, and he walks exceedingly well.

CASE II.—Eliza B., aged 16, was admitted under my care February 23, 1885, suffering from genu valgum of a very marked character. The patient was short and stout, with a satisfactory family history. The in-knee was more marked in the right than the left leg, and considerable enlargement of the lower epiphyses of both femora; no curvature of tibia or other bones. When the knees were closed there was a distance of ten and one-half inches between internal malleoli; the patient walks very badly and is easily tired.

February 27.—The patient was placed under ether. I divided the left femur after Macewen's method, under spray; I used wire sutures for external wound, which was dressed with McGill's silk.

February 29.—Temperature rose to 100° F., but very slight constitutional disturbance. The wound healed slowly, a small ulceration remaining for some time. April 19 the limb was put up in plaster of Paris bandage; good union; length from anterior superior process to internal malleolus, right, twenty-seven inches, and the left, twenty-six inches.

April 17.—Operation was performed on right leg, using catgut sutures and Lister's gauze dressings.

April 19.—Temperature 100° F. Wound healed rapidly; only dressed three or four times. May 25, plaster of Paris bandage applied. The right leg united in a perfectly straight position, but there was a sharp angle left on the outer side of the fracture. The patient had several attacks of tonsillitis with enlarged glands during the month of May.

June 19.—The apparatus was removed, the legs being quite strong, ankles and knees touching, and was able to walk with crutches.

November 23.—Examined the patient again to-day; legs perfectly straight. She told me she had walked three miles the day previous without being tired.

CASE III.—H. K., admitted March 30, 1885, suffering from genu valgum. The patient was a flabby, unhealthy-looking lad, tonsils chronically enlarged, teeth irregular, and the ribs rickety. There was a well-marked genu valgum of right leg, with large lower epiphysis to femur, especially on the inner side, also slight genu valgum on left leg; length from anterior superior spine to external malleolus, right, twenty-three inches, left, twenty-three and one-half inches. When the knees were in apposition the distance between the malleoli was six inches.

April 1.—Under ether and the usual antiseptic precautions the operation was performed on the right leg. May 4 the wound had healed, the knees and ankles are in apposition, and the patient's health has considerably improved, there being no difference in the length of the limbs. The right leg was placed in plaster of Paris bandage.

May 12.—The bone has become firmly united, the tonsils were excised by guillotine, and he was discharged on the 20th inst.

The temperature rose to 100° F. on the evening of April 1, and again on the 4th and the 8th it rose to 102° F., and on the 9th of April it rose to 101° F., but from no apparent cause.

CASE IV.—S. M., aged 19 years, miner, was admitted May 16 with synovitis of right knee. The patient was unable to stand, except by holding on to furniture, from an injury received in the colliery a year before; this prevented him from earning a livelihood. The synovitis subsided under treatment, and it was found he had a well-marked genu valgum on the right leg, and the internal condyle was increased enormously in size, with the sharp corners almost projecting through the skin. On the left leg he had an extensive curvature of the tibia, which was treated by osteotomy.

July 24.—I performed Macewen's operation on the right thigh; catgut ligatures were used for outside wound. The wound was dressed only once, and on the 3d of August was quite healed. The exostoses of bone were removed at a later period.

The advantage of Macewen's operation over those of Ogstan, Reeves, and Barwell consists in the greater simplicity of the operation, and the freedom from danger to the joint. After the operation, nature fills up the triangular cleft in the femur. The outer side of the limb is apparently lengthened. It assails the insufficient external condyle by depressing it to its proper place and the articular surfaces of both condyles to their proper plane.

The four cases of osteotomy which I have narrated above go to prove the slight constitutional disorder set up by an operation of some magnitude, the great improvement that may be brought about in the personal appearance of patients of this class, and the turning to good account the usefulness of the limbs themselves, whilst last, but not least, may we not infer that this operation is a distinct advance in the art of surgery?

*ON THE INFLUENCE OF AGE ON THE
DOSAGE OF NUX VOMICA, WITH
SOME REMARKS ON ITS
THERAPEUTICS.**

By J. H. MUSSER, M.D., PHILADELPHIA.†

It is believed that the following facts regarding nux vomica are not generally known or not fully appreciated by the profession, and that, as far as the writer knows, one of them is entirely new. I refer to the influence of age on the dosage of this drug. The only reference to this important matter that I am aware of is in the last edition of Wood's "Therapeutics," where it is stated that young animals have been found to be less susceptible to the drug than old ones.

A shrewd medical man observed to the writer, some time ago, that he could never get much service from nux vomica except in the aged. Upon endeavoring to find the reason for this it occurred to me that possibly, as with many drugs, the susceptibility to its influence increased with the age of the patient. Opportunity has been afforded me to test this

* Read before the Philadelphia County Medical Society, January 13, 1885.

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surmise, and I can affirm that repeatedly in the out-patient department of the University Hospital its truth has been demonstrated. It is with pleasure I can record that many of my students and my former assistants, Drs. Fussell, Mercur, Emery, Dock, Allyn, and others, can corroborate these statements.

The preparation of nux vomica used was the tincture,‡ and most of the experiments were made with the solution of the Pharmacopœia of 1870. As is well known, it is about one-third stronger than that of 1880.

The maximum dose at any age was not administered, but the usual dose commenced with. This was done, and should be done, to guard against dangers that may arise from idiosyncrasy or cumulative action. Beginning, therefore, with 10 drops three times daily, it was the custom to increase it 3 or 5 drops every second day until some physiological effect was produced, as twitching of some group of voluntary muscles. As soon as this effect was produced the dose was reduced one-third, and in a few days, especially if desirable to produce full effects, ascending doses were again administered. They could invariably be increased beyond the former limit.

Going over the notes of some fifty cases, I find that at from 15 to 40 years of age 45 drops or more of the tincture was almost invariably well borne. After 40 years it was the exception to be able to increase the dose over 35 drops without causing some disagreeable symptoms. In all my cases extreme susceptibility was not observed. Six had apparently no influence on the size of the dose.

One of the patients, aged 24, took 200 drops three times daily with most decided benefit. To another, aged 16, 125 drops were exhibited without experiencing any bad effects. On the other hand, a male, aged 60, could take but 20 drops, and not one over 50 could get beyond 35. Patients aged 16, 24, 28, 35, and 40 took 40, 55, 30, 45, and 45 drops respectively before any therapeutic benefit could be seen.§

At first sight it would appear that the above were unusually large doses. When one remembers that there is about $\frac{1}{100}$ of a grain of strychnine in five minims of the tincture of nux vomica, the dose seems not so great. My observations have taught me that with the usually prescribed dose we can get, in most

‡ For obvious reasons it is not safe to dispense strychnine or other alkaloids in the promiscuous crowd of out-patients, especially as the druggist must dispense rapidly.

§ I do not refer to paralytics, etc., for to these people, even in advanced life, large doses can be administered.

cases, but little results beyond what arises from its local action as a bitter; moreover, what effects we may secure are transient unless we increase the dose. The system readily becomes accustomed to its stimulation.

It is well known that neurologists and ophthalmologists push this drug in a similar manner, but I do not know that ascending doses have been used at the hands of others in cases similar to the ones hereafter to be referred to.

Two effects of large doses of the drug were observed that, under certain circumstances, would be disadvantageous,—the production of diarrhoea and of frequent seminal emissions. Small doses of laudanum would readily control the former, although it is rare that the case would demand such very large doses. The latter symptom could not well be remedied.

The Therapeutics of Nux Vomica.—*Nux vomica* is eminently of service, according to my experience, in dyspepsia of the atonic variety, with or without depression of spirits, hypochondriasis, headache, weight on the head, and other nervous phenomena. It is in these cases that increasing doses are of value. I believe this good effect to be due not alone to the local irritant effect of the drug, as suggested by Ringer, nor to its tonic influence on the muscle and blood-vessels, but to its systemic effect, whereby reflex excitability of the spinal and vaso-motor centres is increased. Digestion is eminently a reflex process. This is seen from the efforts of mastication, throughout the entire process, to that of defecation. Now, it seems to me that atonic dyspepsia and slow digestion, with the train of morbid symptoms that arise therefrom, are due primarily to torpid nerve-centres. They do not respond to the stimulus of food, and hence refuse to send the requisite amount of blood to the glands by virtue of their influence on the vessels, or to stimulate glandular secretion. In fact, this element of diminished reflex excitability may be present, and it seems rational to think so, in all forms of dyspepsia, whether from general debility, the excessive use of indigestible articles of diet, or of stimulants. In these cases it is requisite to get the full effect of the drug. Likewise, in the dyspeptic symptoms that belong to heart-disease, bronchitis, or cirrhosis of the liver, the good effects of *nux vomica* are no doubt on account of its tonic effect on the blood-vessels. In gastric catarrh, on the other hand, small doses of the drug should be used to secure its local irritant action. It

seems to me the same theory, the increase of reflex excitability, may partially explain the good effect of this drug in constipation.

As a respiratory stimulant the action of this drug is well known. I once ordered it to a young girl in doses of 20 drops, and was surprised to find her father had had the bottle replenished twice for a cough. On the occasion of his third visit he confessed it was the best cough mixture he had ever had. Emphysema and chronic bronchitis were the cause of his cough. Last winter the *nux vomica* kept at work the entire season and enabled to walk long distances a man who for years previously would lose weeks and weeks each season on account of asthma and emphysema. His "wind" improved wonderfully, and his great boast was his ability to walk home with his fellow-workmen at their gait. I could readily repeat many instances of the value of this drug where respiratory stimulants are indicated.

In mental and physical depression due to prolonged excitement this drug is of value. One of my students took from 600 to 800 drops daily of the tincture, and thereby successfully tided himself over a period of great strain. In fact, he studied harder and kept later hours than at any other examination period, and with less detriment to his health. He is myopic and astigmatic, and this was the first time he came out of his studies without suffering from eye-strain. The doctor writes me that he has used the drug since in practice under similar circumstances. For instance, he helped along well a young society girl, who was unusually busy with engagements, until the rush was over. The uses of the drug are as dangerous, however, as the use of any stimulant, and should be given only on extraordinary occasions for the purpose indicated. Its use as above serves to show its power as a nerve-stimulant.

It has recently been the custom of students of medicine to take caffeine to keep them awake for study. My observation of the students who had taken one of these drugs was favorable to the use of *nux vomica*. The ones who took it came off with much better health and less nervousness than the caffeine-eaters.

Many patients complain of being more tired on rising in the morning than when retiring. This has disappeared frequently on a course of *nux vomica*. I have also the records of cases of spasm of the œsophagus, of excessive flatulency, of nervous depression, characterized by fear, by ready excitability, by mental lethargy, irritability, etc., and of forms

of hysteria,—occurring late in life especially, —which were improved by this drug.

There are, of course, other well-known uses for this valuable drug which time and space will not permit me to detail. In small and frequently-repeated doses it has been recommended to be used, but I confess I have never had any good results from its use in this manner. Ringer recommends it in acute gastric catarrh, with "sick headache" and slight nausea, only in doses of 1 drop, in water, every five or ten minutes, until eight doses are taken. It may be a mere coincidence, but nevertheless in every instance of a similar character in which I used it, it caused vomiting without any relief.

The following are some of the conclusions which may be drawn from the above statements :

1. The effects of *nux vomica* are in inverse proportion to the age of the patient ; the susceptibility increases with the age.
2. The usual doses of the tincture indicated in the text-books are inadequate for many practical purposes, and do not represent the usual dose of strychnine.
3. It is a powerful and rather transient stimulant.
4. The best therapeutical effects can be secured in many cases only by pushing the drug almost to the physiological dose.
5. The system soon becomes accustomed to its use, and the dose must be increased.
6. The good effects in dyspepsia are largely due to its power to heighten reflex excitability.

PALATABLE THERAPEUTICS.*

BY FRANKLIN H. MARTIN, M.D., CHICAGO.†

NOWHERE in medicine is the strong hand of radical reform more needed than in therapeutics. An innovation of a radical nature in the field of *materia medica* or *therapeutics* has, until lately, been looked upon as something little short of irreverence. It seemed to be a foregone conclusion that the old traditions with their long lists of nauseous and incompatible boluses, infusions, decoctions, tinctures, extracts, powders, salts, pills, oils, blisters, etc., must be religiously guarded

from the insinuating finger of reform. A new curative method or a new theory of administration was very liable to be condemned as quackery. The present state of scientific thought, however, with its intense light, is gradually dispelling this fog of exclusiveness, and even in therapeutics we begin to feel that we are out of darkness.

We now freely admit that many of therapeutics' greatest strides have been the outcome of suggestions gleaned from the fields of charlatanism. We have been led at a late hour to recognize the advantages of faradic, static, and galvanic electricity as a therapeutic agent, and to place it upon a legitimate and scientific basis. Massage and "Swedish movement" have been recovered from the same questionable ground, and have fast become valuable adjuvants to our curative list. And upon going back over our long list of vegetable, mineral, and animal drugs, we find that the majority of them were born in barbarism, and from their obscurity were made prominent by the hand of the busy empiric, and by a justly-earned reputation have forced the doors of our pharmacopœia. Thus by investigating and appropriating in all places we have increased.

While we have pursued our explorations in the fields of medicine and established therapeutics upon a more scientific basis by means of improved methods of investigation, while we have isolated new remedies, established new principles, and developed new theories, have we not neglected too much, some of us, to bear in mind the practical fact that to be successful and humane practitioners of medicine we must consider the peculiar tastes of our patients as well as the scientific application of our remedies to disease? While it is gratifying to us to know of a certain drug its *modus operandi*, it is gratifying to a long-suffering patient to have that drug administered in a palatable form.

Herein lies the secret of success of that unscientific and utterly irrational dogma of Hahnemann—homœopathy. The so-called remedies of homœopathy are tasteless because of their infinitesimal division. On account of their palatability they are popular with that class of patients who will not tolerate nauseous drugs, and who are not educated to the point of appreciating the utter fallibility of homœopathic so-called remedies. There is not a regular practitioner of medicine who has not been annoyed by some misinformed patient persistently asserting that the only difference between regular practice and ho-

* The substance of this paper was read before the Chicago Medical Society.

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mœopathy is that the former includes all those drugs which are unpalatable and strong, while the latter all that are palatable and mild. Judging from prescriptions that we often see, we cannot but admit that there is some reason for this unjust conclusion.

We can learn one very important lesson from this unfortunate state of affairs. We find homœopathy, possessing absolutely no merit, succeeding because of three qualities of a nature which demonstrate its weakness. These qualities are palatability (because of infinite division), harmlessness (because of inertness), cheapness (because of lack of substance). If a system of medicine can conceive, survive, and thrive upon these negative qualities alone, how much more could be accomplished by *true* medicine, possessing the accumulated merit of all time, if *it* would adopt as far as possible these requisites of homœopathy as adjuvants of its system of administration!

The object of this paper is to discuss, without making any claims to originality, the means by which we can avoid offending the palate of our patients while administering and receiving all the advantages of our many efficient remedies.

Alkaloids.—Hahnemann made all medicines palatable by infinitely dividing them. We can make many of our medicines palatable by concentration. In this department very much is constantly being accomplished by chemistry and pharmacy. The key to a great work in this direction was discovered in 1817, when Sertürner, a German apothecary, announced the existence of morphine. This gave an impulse to organic chemistry which has been, and will be, of inestimable value to pharmacology. Since that time a large number of alkaloids have been extracted, many of which have already taken prominent places in medicine as substitutes for original bulky drugs. These vegetable alkaloids usually possess a definite physiological action nearly resembling the action of the parent drug. They have a definite chemical composition, and with acids form salts. They possess, therefore, the very desirable properties of uniformity and adaptability. Representing, as many of them do, all the medical virtues of the crude drug from which they are extracted, in them we have a very concentrated and uniform substitute. By improved pharmaceutical methods these concentrated alkaloids can be divided into representative doses, made into small granular masses with proper excipients, and thoroughly disguised by a

thin coating of tasteless and readily soluble gelatin or sugar; thus making an elegant and perfectly palatable dose of uniform strength, of definite composition, representing what in the old galenical preparation of the crude drug would have been nauseous, ununiform, and disgusting.

Already about twenty-two of our most prominent drugs are represented in their alkaloids in these little masses, each contained in an elegant gelatin or sugar sphere one-sixteenth to one-eighth of an inch in diameter.

Glucosides, or Neutral Principles.—Besides the alkaloids there are certain proximate vegetable principles which are of great value to us as palatable therapeutists. They are of definite and uniform strength like alkaloids, and many of them, like the alkaloids, represent the medical properties of the vegetable from which they are extracted. They are classed as *glucosides*. Amygdalin, the first principle of this kind isolated, was discovered by Liebig and Wöhler in 1837. In the great march of organic chemistry the glucosides have not been neglected, and we find that about twenty of our valuable vegetable drugs are as well represented by these neutral principles as the alkaloids represent all that is of medicinal value of their particular source. These principles are usually in the form of crystals, or amorphous powder, and represent in many cases the full medicinal value of the vegetable from which they are extracted in a very concentrated and uniform shape. They are, therefore, rapidly occupying a prominent place in our therapeutics, and becoming as popular as their worthy rivals,—the alkaloids. As stated above, about twenty of these glucosides have been tested and arranged, and already, by the enterprising pharmacists, have been manufactured into gelatin- or sugar-covered granules of appropriate doses.

Thus we find that we can get the full result of the physiological action of forty of our most powerful and valuable drugs represented in their *active principles*, the alkaloids and glucosides. They represent the properties of the mother-drug free from all extraneous matter,—*concentrated, uniform, and absorbable*.

Unfortunately, however, this branch of pharmacology is in its infancy, and many alkaloids and glucosides are still locked in the mysterious womb of the mother-drug, and until they are searched out and delivered we must adopt other means of making palatable our doses.

Solid Extracts.—By means of extracts freed

of all unnecessary extraneous matter we can administer many drugs palatably by adopting the gelatin capsule and the gelatin pill. Since the nauseous uncovered pills have been displaced by absolutely tasteless gelatin- and sugar-coated ones, the old popular abhorrence of this method of taking medicine has subsided into a pleasing indifference. Pills of a reasonable size are no longer objected to. The smaller-sized capsules are becoming very popular with both patient and physician. They have been the means in my hands of allaying the prejudice against the "Old School" of more than one homœopathic adherent. By means of these capsules the practitioner can, by the exercise of his ingenuity, administer a great many valuable but nauseous doses to the most delicate palate. The gelatin-coated pills will also be of advantage to the physician in administering well-trying combinations as well as single remedies. We have been given in the last Pharmacopœia thirty-two reliable solid extracts, which represent the majority of our most valuable vegetable drugs. The full medicinal effect, with few exceptions, can be obtained from these drugs by administering their extracts, palatably and elegantly stored away in these little capsules. Besides the extracts, there are a great number of other drugs that can be administered in the capsule or the tasteless pill. The salts of the various metals that are administered internally can be administered in capsules, or the pill or granule. The bromide and iodide of sodium and potassium are suited for capsules. The powdered salt can be given in doses of from 2 to 5 grains in capsules that can be readily swallowed. It may be necessary in some cases, after giving large doses of these salts in capsules, to follow them with a small quantity of water, in order to dilute the salt as it becomes free, and before it comes in direct contact with the mucous membrane of the stomach, as otherwise irritation of the stomach is caused.

If one is really desirous of making medicines palatable, his ingenuity will suggest many drugs that can be represented in pill or capsule that ordinarily are put into vile combination in mixtures.

Tasteless Salts.—There are a number of salts and combinations that are practically tasteless that can be administered palatably in powder or dissolved in small quantities of water. In our last Pharmacopœia I find ten that can be given in teaspoonful doses of water. Tartar emetic is a fair example of this class. There are eight that can be given

as tasteless powders in small doses. Of these calomel is an example.

Tinctures and other Tasteless Solutions.—Quite a list of our tinctures can be given in palatable and appropriate doses by mixing with drachm doses of water. This makes a very elegant and at the same time effective method of administering tasteless tinctures, and deserves to become popular. Of the tinctures recognized by the Pharmacopœia eight can be administered in this way. Tincture of gelsemium and tincture of aconite may be mentioned as examples. It is a fact worthy of note that many of our tinctures that are now unpalatable are so because of extraneous matter they contain, which might by proper methods of preparation be extracted and eliminated without affecting the medicinal value of the drug. Fowler's solution is an example of a chemical solution that is palatable and can be given in small doses of water. I find six similar solutions that can be rendered palatable in the same way.

Oils and Oleoresins.—Until of late the most difficult problem to solve in palatable prescribing was the administration of the oils and oleoresins. They are of great value to our armamentarium, and indispensable to complete medicine. In the uncovered state they are the most abhorred drugs, even by the staunchest friends of regular practice, that our list contains. Castor oil, cod-liver oil, turpentine oil, olive oil, and copaiba have been the means, no doubt, of converting a multitude to homœopathy. To our enterprising pharmacists at last our thanks are due for no longer being obliged to insult the stomach and disgust our patients by insisting that they pour down these greasy nauseates. The *flexible elastic capsule*, first put into practical form by our large pharmaceutical firms, is bound to become very popular as a means of administering the oils and oleoresins. One large Western house (Parke, Davis & Co.) has manufactured these capsules and filled them with sixty-seven different formulas. The responsibility rests with the physician to see that these valuable suggestions, that are put into practical form by well-known and reliable pharmaceutical houses, are taken advantage of and made requisite of our practice. These soft elastic capsules are manufactured in all sizes from one-half ounce down to two minims. They are easily swallowed, and afford complete palatability.

Acids.—We have disposed of the majority of our valuable drugs, still we have a few that it is necessary to occasionally employ that can-

not be administered in granules, in pills, or any capsule. Among these we get the acids. The acids, while they cannot be administered as tasteless remedies, can, by proper dilution, be made palatable. A small dose of well-diluted acid in properly flavored and sweetened water is often taken with relish. Where we find it necessary to give acids, by adopting this method, protecting the teeth by the use of a tube, much will be done toward popularizing the acids. It is better to give small, often-repeated agreeable doses, and retain the good-will and co-operation of the patient, than lose control of all by the opposite course.

Thus it is easily seen that with ingenuity and tact about all the effects that are to be obtained from the administration of drugs can be obtained without offending the palate. Especially when we have considered the numerous channels through which medicines can be administered other than the mouth will this seem feasible. And before closing I wish to make a plea in this direction. Many nauseating doses are spared by the judicious use of suppositories, by the appropriate use of the oleates, by the proper use of enemata, and by the elegant and prompt effect of the hypodermic.

It will be claimed by some, when prompt action is necessary, that pills and granules and capsules will not be so rapidly absorbed as remedies in solution. Where promptness is the desired effect, the hypodermic syringe is the means *par excellence*, and, by proper use, will accomplish all that is desirable in that direction.

We can summarize, then, the means by which the regular profession can administer, and obtain all the effects of, their remedies without offending the most delicate palate under the following heads:

1st. Administration of the *alkaloids, neutral principles*, and other drugs of *small bulk* in *gelatin-* or *sugar-coated granules*.

2d. Administration of *solid extracts, crude drugs of small bulk*, and the various salts in *pills of gelatin or sugar and gelatin capsules*.

3d. Administration of tasteless tinctures and other tasteless liquids alone or mixed in water.

4th. Administration of the *oils, oleoresins, oleates*, and drugs soluble in oils in *elastic capsules*.

5th. Administration of acids well diluted in sweetened and properly-flavored water.

6th. Administration by hypodermic injection, by suppositories, by enemata, and by inunction.

Thus we have, imperfect though it be, a system of palatable therapeutics. I am far from being *entirely* satisfied with it. I am convinced, however, that it is capable of being gradually developed to perfection. I believe it would be to the interest of our system, unsatisfactory as it at first might appear, if each of us would constitute himself a nucleus for a vigorous reform in this direction.

We cannot with proper dignity attack homœopathy in any other way. We recognize in it an adversary as aggravating as it is utterly devoid of scientific merit. We cannot kill it by fighting it, but we can sink it into insignificance by improving ourselves.

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THE CULTIVATION OF COCA.

BY HENRY H. RUSBY, M.D.

FOR more than two months the writer has been continuously engaged in the study of the coca-plant and its products in the districts of Bolivia which produce the best quality of leaves. The results, which are likely to greatly increase the recently-created interest in the plant, will be published shortly, when his studies shall have been concluded. At the present time I will only discuss a question concerning which speculation is rife, namely, the adaptability of the plant to culture in countries where it is now unknown.

For the details concerning cultivation here presented I am chiefly indebted to Mr. Oscar Lohse, one of the most intelligent cultivators in this country, and proprietor of the Finca of San Antonio, two leagues from the town of Carcoica, Yungas.

The district of Carcoica may be considered as fitly representing the remainder of Yungas, and Yungas as representing the principal coca districts of this republic. The conditions of soil and climate may be briefly stated. Proceeding eastward from La Paz, itself somewhat more than ten thousand feet* above the sea, for a distance of four or five leagues, we reach the summit of the pass over the easternmost cordillera of the Andes, this cordillera having an average elevation in this immediate district of perhaps sixteen thousand feet. This ridge, always more or less snow-covered, cuts off a large portion of the westward-bound clouds, which are thus either

* I have given altitudes and measurements approximately in English feet. By the Spanish measurements the altitudes are much greater.

precipitated in the form of rain before reaching the summit, or, arriving there, are deposited in the form of snow, and then returned by means of rivulets to the valleys, chiefly of the eastern slope. It should be noted that in Northern Peru and Ecuador this cordillera is higher than here, so that the eastern slope in those regions is more profusely and regularly watered than here. From this pass, had we a direct road, we could travel in half a day, so steep is the descent, to the banks of the Carcica River, having an altitude of only two thousand four hundred feet. When we have descended to six thousand four hundred feet we should meet with our first coca plantations, and after passing the two thousand foot level we should have left them principally or entirely behind. Within this four or five thousand feet, then, lie the cocales of Bolivia. No description can convey a perfect idea of the steepness of this luxuriant slope. Travel, entirely by riding-animals, is extremely difficult. There are only occasional places where we can readily leave the road, and here plantations are established. The hedge of coffee-plants at the roadside proves on examination to be the uppermost row of a plantation; and as we peer down among the shrubs we marvel that any one can preserve his footing while cultivating or collecting the coffee. The scenery is of course magnificent, and of a different type, I should think, from that of any other part of the world. The mountains are too young to have lost, to a great extent, their ragged outline, yet softness is imparted by the richness of the vegetation. We stand among the coca-plants and distinctly see another calal nearly four thousand feet below us.

As there is no better guide to the agricultural capacities of a country than its native plants, I will mention the characteristic classes. At the pass, with an altitude of about thirteen thousand feet, we have but little vegetation,—this low and mat-like, to escape the cold and the winds. Crossing, soon after, a spur having an elevation of one or two thousand feet less, we meet with several Gentianaceæ, notably a *Halenia*, believed to be *H. Rothrockii*, Gray, of New Mexico. Here, also, are some shrubs in Acanthaceæ and Bignoniaceæ. At nine thousand feet we begin to find Orchids and Calceolarias, with some small trees in Melastomaceæ. At eight thousand feet we meet with our first tree-ferns; the timber-trees become quite large, and Begonias begin to make their appearance. From this point the vegetation begins to assume a really tropical aspect.

We find many species of Calceolaria, Fuchsia, and Amaryllidaceæ, while the variety of orchids and ferns is quite bewildering. At six thousand five hundred feet we see the first palms, and the forest-trees become buttressed giants, staggering under their loads of vines and climbing aroids and ferns, and their branches covered with Bromeliaceæ, orchids, and other parasites. Seventy parasites have been counted upon a single fallen tree.

The cultivated plants of the coca district are coffee, rice, cacao, sugar cane, tobacco, maize, cotton (the arborescent species), sweet potatoes, yuccas, and the ordinary garden vegetables. The principal fruits are oranges, bananas, cocoanuts, lemons (sweet and sour), citrons, grapes, chirimoyas, alligator-pears, tumbas, pomegranates, grenadillas, figs, papayas, lukmas, melons, and pineapples, the last just introduced.

The soil in such a broken country is of course very diversified, ranging from a very light decomposed shale or sandstone to a heavy blue or chiefly yellow clay.

The rainy season begins in October, and continues until May or June. During this time the rains are copious and almost constant. During the succeeding two months there is scarcely a drop of rain, and during the next two there are only occasional showers.

Such are the conditions under which the coca grows in this section.

When we come now to consider the methods of cultivation here adopted, we must be cautious about accepting them as the best, merely because they are generally followed here. It is to be remembered that the Bolivian system of agriculture has not received the attention that it should have had, and that it is very probable that reforms might be introduced in present methods.

Nor is it proper to proceed concerning coca-culture without a few words concerning what is meant by the "best quality" of coca-leaves. To a manufacturing chemist the best quality would mean the quality that would yield the largest percentage of crystallizable cocaine, obtainable in the easiest manner, while the same coca might be considered for domestic consumption as representing one of the lower grades. It is highly probable that the amount of cocaine forms no element in the Indian's estimate of the quality of coca, no more than the percentage of nicotine establishes the quality of a particular grade of tobacco. Coca-leaves are classed in general by the Indians as "*hajas dulces*" (sweet

leaves) and "hajas amargas" (bitter leaves). The former are made sweet by the abundance of alkaloids other than cocaine. While it is true that a greater abundance of those alkaloids is usually accompanied by a larger percentage of cocaine also, yet the variation in the amount of the latter is not so great as in the former; so that while in the sweet leaves the bitter taste of the cocaine is masked by the presence of the other alkaloids, in the bitter leaves its flavor is the predominant one. The presence, then, of these *sweet alkaloids*, as we may call them, translating the simple and expressive term of the Indians, determines the domestic value of the coca, and all that is known of the best methods of cultivation is based on the production of the highest percentage of these alkaloids. Experience may determine that for manufacturing purposes a very different line of principles of culture should be followed.

I have made a large number of assays tending towards elevations, soils, exposures, seasons, ages of plants, and of leaves, different varieties, wild and domestic, different parts of the plant, and various modes of drying and packing. The results will be embodied in a future monograph, mere passing references being made to them for the present. I have about concluded that the percentage of the sweet alkaloids varies inversely as the amount and continuousness of moisture that the plant receives. Thus, the Peruvian, Ecuadorian, and Brazilian coca, which, as I have stated, is much more copiously and regularly watered than the Bolivian, is markedly inferior, so that Bolivia regularly exports about one-eighth of her crop to those countries. I am inclined to think that the greater breadth and thinness of the northern leaf may be partly due to the greater water-supply and the consequent greater degree of evaporation. Again, the Indian always seeks the coca grown at the higher elevations, where the humidity is much less and more irregular than in the districts along the rivers. We are thus obliged, for reasons to be elaborated in the future, to regard these alkaloids as preserving a sort of a balance of moisture, by which the plant stores up during the wet weather a concentrated supply of water, which may be very slowly yielded up during a time of need.

Having thus chosen a high altitude, the next thing is to select a soil. A rivalry exists between a yellow clay and a hill-side soil rich in vegetable matter. My assays have yielded the best results (as to total alkaloids) from

soils of the latter class, and I am inclined to think that those who prefer the former soil do so because it yields a somewhat larger crop.

The ground for the nursery-bed is prepared during the latter part of the dry season by breaking it up very thoroughly to the depth of a foot or more. The fruits mature during the early part of the rainy season, December and January. They are red, and consist of a fleshy outer portion and a shell-like inner portion, which encloses the single seed. These people suppose that the germ cannot escape from the shell if planted in its natural condition, and they have continued for hundreds of years to deposit the seeds as soon as gathered in a shaded place, in layers an inch or more deep, and covered with a thin layer of decaying leaves or similar substance. The heat generated by the decomposition of the fleshy pericarp serves to induce germination, and the embryo bursts from its bony covering. This growth unites them, in from eight to fourteen days, into a solid mass, which is broken up into small pieces and planted in furrows in the nursery. In this process very many of the sprouts are broken off and the plants destroyed. Mr. Lohse has adopted the plan of sowing the seeds broadcast as soon as gathered, and covering with a little earth, or, better, a layer of banana-leaves or other decaying vegetable matter. Germination requires from eight to twelve days longer, but all the plants are saved. In either case a covering of brush or straw must be placed over the nursery, at first only three or four inches above the surface, and elevated to six or seven inches as the plants grow. Usually this elevation is repeated once more.

All this taking place during the rainy season, the plants have reached a good size before the advent of the dry weather, and so do not call for any artificial water-supply. Advantage is taken of the ensuing dry season to clear the land and prepare the ground for the new coca. On the manner in which this is done depends much of the future well-being of the plants. The ground should be thoroughly powdered to the depth of two, and, if possible, three feet, all roots and large stones being removed. On these steep slopes it is necessary to terrace, the terraces being supported by stone walls, the stones laid dry. The width of the terraces, according to the slope, varies from several feet, with a number of rows of plants, to much less than the height of the wall, only a single row of plants being admissible. It is here generally believed that

shade tends to the production of the best quality of leaves ; so the cocales are planted thickly with a small broad-topped leguminous tree related to the St. John's bread, but whose name I cannot at this moment recall. There is no doubt that this is a mistake. I have made repeated comparative assays of shade-grown and sun-grown leaves from adjoining plants, and invariably found the latter much richer in total alkaloids. I judge the custom to have arisen from two considerations. There is, as I have stated, a period of two or three months when the plants receive no rain, and then these trees afford a protection from the fierce heat. Secondly, shade conduces to the production of a large, smooth, beautiful leaf, of elegant color, and thus adds to the *appearance* of the product. The terraces being thus prepared, on the advent of the permanent rainy season the plants, now from eight to twelve inches high, are transplanted, being set from one-half to six inches apart, according to ideas of the haciennero. From this time until the first leaves are picked the greatest care must be taken to keep the soil thoroughly stirred and free from weeds. The plants having been transferred in October or November of one year, the first picking is made in March or April of the second following year, one year and a half from the time of transplanting, or two and one-half from the seeds. In case an insufficient space has been prepared, the remaining plants are often left until the following year, and then transplanted, the operation being much more dangerous to the life of the plants.

The chief danger of picking the leaves earlier than the period indicated above is not the strain upon the vitality of the young plant, as many of the leaves drop of themselves, but because it is almost impossible to avoid breaking off the very tender tips of the twigs, the result being fatal to many plants. Immediately after this first picking, fresh leaves develop with great rapidity, and in July or August of the same year the plant flowers for the first time. The lovely white flowers, if undisturbed, remain for from three to six days ; but from the very first they are dislodged by the slightest jar, the corolla falling entire, although it is morphologically polypetalous. The fruit ripens in December and January.

During the first few years the percentage of alkaloid increases rapidly, reaching its maximum at or before the age of ten years. At the age of twenty it begins to diminish, but with extreme slowness, so that the plants

are practically in their prime up to the age of thirty-five or forty. It is probable that the decline is then due rather to the exhaustion of the soil than of the vitality of the plant. Fertilization of the soil has never been resorted to. It is probable, as suggested by Mr. Lohse, that as much can be done for the coca in this way as has been done for other plants.

A coca harvest is called a *mita*, an Indian word meaning a division or drawing of lots, and there are from three to five in a year, according to the season. The time of picking is determined solely by the condition of the leaves. When they have become mature they turn yellow if in the dry season, and brown if in the rainy, and within eight days at the outside will fall to the ground and be lost. As soon as the mita is over, the ground is cleared from weeds, and, under an ignorant notion that further cleaning is injurious, is left undisturbed until after the next mita. But Mr. Lohse has tried the plan of keeping the ground clean, with the result, thus far, of receiving the next crop in little more than one-half the time required by his neighbors. No irrigation is resorted to during the dry season. Although it is possible that good might result, at least to the welfare of the plant and the size of the crop, I suspect that after a long time an abundant and steady supply of water would result in a decrease in the amount of alkaloids. Mr. Lohse has tried the experiment of mulching at the end of the wet season with a few inches of banana-leaves or other refuse, with excellent effect upon the plants during the succeeding dry season.

This plant is subject to only two diseases of any importance. The first is *taja*, which I suppose to be the result of a fungus which attacks the undeveloped leaves and tender twigs. It is said by some to be caused by careless picking, in which the twigs are broken. By others it is said to result from the planting of seeds taken from young plants. The only remedy is to remove and burn the diseased portions. The second disease, if such it can be called, is the ravages of a caterpillar called "*ulo*," which makes its appearance in December, and destroys the crop so quickly that it admits of no remedy.

The method of picking and drying the coca has been so often and so well described of late that it is not necessary to dwell upon it. Coca-picking is a profession to which the children are trained from a tender age. The leaves are picked singly, both hands being employed with a rapid alternating motion,

which strips a twig in an instant. Great care is taken to avoid breaking the twigs, and the young leaves are not picked. Little sacks are tied about the waist, or the women's aprons are pinned or sewn into the required form. They are then transferred to larger sacks, which must be filled and emptied with great promptness, or the leaves will become heated and turn black.

The price here paid for picking is a Bolivian dollar, equal to about seventy-one cents United States currency, for each thirty pounds, which, when dry, will weigh about twelve pounds.

The leaves are exposed to a hot sun upon a pavement of nicely-fitted flat stones, and stirred occasionally until dry. Under the most favorable conditions the drying is accomplished in about three hours. About the coca place are built the storage- and packing-sheds. These are furnished with very broad doors, and men are in constant attendance to sweep the coca with brush-brooms through these broad portals at the slightest indication of rain. A very few drops of rain are sufficient to decolorize and ruin the sale of the coca, though it is my impression that such decolorization, if produced by but little rain, is no indication of loss of cocaine. During the first few days that the dry coca lies within the storage-sheds it undergoes a slight sweating process.

When I come now to speak of the best methods of packing the coca for export, it is fair to say that nothing definite is known. Such coca as has reached Europe or the United States in good condition has done so purely by accident; for perhaps the very next lot, dried, packed, and shipped as nearly as possible in the same manner, has arrived entirely ruined. I have tried many methods, and as often as I had thought that the secret was discovered my hopes have resulted in disappointment.

As regards the exportation of the culture of coca, the experiment has been tried, I believe, but once. Several years since, Mr. F. L. Steinart, of La Paz, shipped a small quantity of seeds *via* London to Ceylon, and during the past season the first products were shipped to London and sold at a high price. Seeds for export should be exposed for several days to a hot sun, so as to rapidly dry the fleshy exterior, which thus forms a protection to the germ within.

It is my opinion that the coca-plant is adapted for culture in many countries where it is now unknown. Among the countries where it would be well to experiment with it

are Guatemala, Mexico, the East and West Indies, India, Southern China, portions of Africa, and possibly of Italy. It is doubtful if it would grow in any portion of the United States. Requiring an average temperature of at least 70°, the only districts at all suited would be Florida and Southern Texas; and it is highly probable that proximity to the sea-coast at so low an altitude would prove fatal. Nor would irrigation prove adequate in those countries possessing a long dry season. The plants must not only have an abundant supply of water at the roots; they must be bathed in a humid atmosphere for the greater portion of the year. But from what I have read of some of the countries above named, I am confident that the plant would there find a congenial home. Jamaica offers especially hopeful conditions.

NOTES ON THE USE OF A FIVE PER CENT. SOLUTION OF BRUCINE.

BY RALF W. ZEISS, M.D., PHILADELPHIA.

I HAVE arrived at the following conclusions from experiments made with the brucine kindly handed to me by Dr. Mays:

1. I have twice applied the solution, by means of a tuft of cotton on a cotton-holder, to painful *furuncles* of the external auditory canal. In both cases marked relief was noticed in from two to four minutes, which lasted for some hours, when the pain slowly returned as before. Skin in these cases not broken.

2. In cases of painful *suppurative otitis* of the middle ear (some five or six in all) the solution gave *some* relief in *all* cases; very *marked* relief from pain, lasting for a number of hours, in two cases. In these patients the solution was passed on the cotton tuft down to the fundus of the canal, and the raw and often bleeding surface carefully and thoroughly mopped.

3. I have used the brucine solution some scores of times in *sensitive conditions* of the auditory canal to render the use of instruments painless. No record was kept of these, but in about one-half the cases the patients volunteered the statement, "It don't hurt as much now," while in the other half no results of any importance were obtained, sensitiveness being in no way lessened.

4. Brucine, in my hands, has proved most useful in lessening or entirely abolishing the pain and burning caused by *applications* of

iodine, nitrate of silver, sulphate of copper, and the like to the mucous membrane of the throat and nasal passages. I have repeatedly used it in these cases, perhaps nearly fifty times, and in almost every case relief was noticed, and in the majority of the cases pain and irritation were at once overcome.

5. In one or two cases of *burns* the solution has proved valueless.

6. Painted along the line of incision before opening a shallow abscess, it did no good whatever, the patient suffering as much as usual.

7. Used on the external surface of the body, the five per cent. solution has proved of no value whatever in my hands.

Speaking generally, I do not consider the brucine salt equal in its local effects to the muriate of cocaine. Though more lasting, it is much less reliable, nor does it seem to be so readily absorbed.

In some two or three instances, after liberal applications of brucine to the nasal cavities, patients have complained of having felt wildly "nervous" for some hours afterwards, evidently from the strychnine-like effects of the drug. In no other instances were the slightest toxic effects noted, although as much as $\frac{v}{v}$ of the solution has been repeatedly used in the middle ear and nasal fossæ.

1338 SPRING GARDEN STREET.

ON ANTIPYRETICS.

BY GEO. J. ZIEGLER, M.D., PHILADELPHIA.

THE editorial on antipyresis in the October number of the *THERAPEUTIC GAZETTE* justly commends the value of the hydrotherapeutic treatment of fevers, with its general salutary effects in reducing bodily temperature and febrile disorder, subverting concomitant abnormal action, and in restoring the normal processes of the vital economy. But, while this hydiatic treatment of fevers is undoubtedly very beneficial, it is generally so inconvenient and troublesome, especially in the form of baths, even in hospitals, where every appliance therefor is at hand, as to greatly restrict its application, and so much the more in the limited resources of individual life and private practice as often to render its regular and frequent employment therein almost impossible, except in children, and by the moderate local application of ice and cold water externally, and the more or less free use thereof internally. Besides, this hydro-

therapeutics influences secondary rather than primary abnormalities, as it affects the latter only indirectly instead of directly, thereby treating sequents instead of antecedents, or effects rather than causes, whereas some more immediate therapeutic agency is required to counteract or neutralize and resolve the basic abnormality, and subvert the febrile and other morbid sequelæ *ab initio*. Hence the necessity for some more direct, convenient, and effective antipyretic and febrifuge that will suppress the primal aberration and hyperpyrexia *ab origo*, and act in general as a substitute therefor, as well as adjuvant to the hydiatic measures when they are desirable and circumstances are favorable for their employment. Now, in the eager search for new remedies, a large class of powerful antipyretics and febrifuges are strangely overlooked and greatly neglected. These are embodied in those varied sanative and medicinal agents known under the general term of "acids,"—mineral, vegetal, and animal,—most of which are more or less endowed with refrigerant and antifebrile properties, and many with additional specific germicidal, antizymotic, antiseptic, disinfectant, secernent, depurative, and other sanative attributes that render them specially effective in preventing and counteracting pyrexial diseases of the most malignant and destructive, as well as ordinary character, with minor affections of various kinds. Furthermore, besides their general antipyretic and febrifuge power, they differ materially from one another in having some special property adapting them respectively more particularly for the varied states and conditions or individual peculiarities of different diseases, so that by a due appreciation and judicious selection thereof they can severally be more specifically applied to the treatment of the particular form and phase of morbidity to which they are most antagonistic.

Thus, for instance, hydrocyanic acid is a potent, prompt, and persistent antipyretic and febrifuge, speedily allaying irritation, fever, and heat, and causing chilliness and depression. It rapidly reduces excitement of the brain, nervous and muscular, or sensori- and excitomotor system, heart and circulation, with cell, molecular, and vital activity in general, and is especially useful in cerebral, nervous, muscular, and cardiac superexcitability, with hyperæsthesia, irritations, inflammations, fevers, and other disorders of a sthenic type, both general and local. It is, in fact, a powerful and prompt cerebral, nervous, arterial, muscular, molecular, and systemic sedative, but from its

potency must always be exhibited with much care and discretion in small and not too frequent doses, properly diluted, or in the form of cherry-laurel water (aq. lauro-cerasi). As its effects are decided and prolonged, it is better to give small and rather frequent than risk the danger of large doses. Thus, of the dilute acid, beginning with 1 or 2 drops, further diluted; and of the cherry-laurel water, which is liable to vary in strength, from 10 minims to $\frac{1}{2}$ fluidrachm, carefully graduating the quantity and frequency of the dose to the necessities of the case, diminishing or omitting altogether as the desired effect is produced.

Hydrobromic acid is another active sedative antipyretic and febrifuge of similar general applications, but less energetic and depressing than hydrocyanic acid, having besides valuable antizymotic, antiseptic, disinfectant, depurant, and other properties that render it particularly applicable to the treatment of the sthenic forms and stages of zymotic, septic, and nervous fevers, as of variola, scarlatina, and allied malignant and contagious, with irritative, hectic, and other non-infectious diseases.

Thus, in general, these with other sedative acids are more especially indicated in the acute and sthenic than the asthenic types and phases of disease, and may usually be advantageously exhibited, properly differentiated, singly or in conjunction with other compatible remedies, in neuro-sthenic, pyrexial, and inflammatory disorders.

But, as many febrile and allied diseases are essentially asthenic from the beginning, or inherently of an adynamic nature, antipyretics, febrifuges, nervines, and other remedies of a tonic and supporting character are required therein from their inception. Fortunately, there are various acidulous refrigerants and corroborants of this nature, prominent among which are nitric, hydrochloric, nitro-hydrochloric, sulphuric, phosphoric, lactic, citric, and other acids, with their correlative substances, both medicinal and alimentary, a detail of the special properties and applications of which would be too extensive for the limited space of a journal, but which, with collateral, remedial, and sanative agents, I have presented in my work on the "Basic Pathology and Specific Treatment of Diphtheria, Typhoid, Zymotic, Septic, and Allied Diseases." In addition to their positive antipyretic and febrifuge powers, most of these acidulous medicaments are endowed with valuable germicidal, antizymotic, antiseptic,

antiperiodic, disinfectant, depurant corroborant, and other active remedial properties; and some of them in various alimentary combinations possess additional nutrient attributes, which render them doubly useful for medicinal and dietetic purposes, and in the preventive as well as curative treatment of febrile and other diseases. They not only reduce the bodily heat and fever, but also counteract the basic and underlying abnormality upon which they are dependent, and, at the same time, some supply a modicum of nourishment, while most of them actively promote digestion and nutrition, circulation, secretion, diuresis, depuration, defecation, and renovation; and some general invigoration and tonicity of body and mind.

Thus correct differentiation and discrimination of the specific differences and applications of these varied, simple, and compound acidulous antipyretics, febrifuges, antizymotics, antiseptics, antiperiodics, germicides, disinfectants, sedatives, stimulants, tonics, and nutrients would greatly diminish the occurrence and activity, as well as simplify and render more positive and successful the curative treatment of those formidable febrile and other maladies that so largely afflict and destroy mankind. Besides, they have in general the desirable advantages of being convenient, cheap, and agreeable, or not unpleasant to take, as well as efficient, points often of vital importance to both physicians and patients.

THE INTERNAL USE OF CHLOROFORM.

BY DAVIDSON SCOTT, M.D., SPOKANE FALLS, WASHINGTON TERRITORY.

THE fear expressed in some quarters regarding the danger of chloroform internally in physiological doses is entirely unfounded. Chloroform in drachm doses is a prompt and safe hypnotic. The physiological effect is sleep, lasting usually about two hours. To get this effect the same precautions are necessary that obtain in procuring natural sleep, viz., the recumbent posture, a darkened chamber, and quietude. Otherwise the subject experiences an unpleasant effect of stimulation, and notably a sense of fullness in the head, with confusion of thought. These unpleasant effects soon pass off, leaving, perhaps, a slight headache.

In the majority of cases the effects of drachm doses are no more unpleasant than those following a glass of spirits in those not

addicted to its use. In 1867 I reported in *The Chicago Med. Examiner* fifty-six cases of intermittent fever in which I had administered chloroform in drachm doses during the cold stage. A summary of this report may be found in the *American Journal of the Medical Sciences*, April, 1868. Since then I have given it to more than five hundred different individuals for different morbid conditions, without unpleasant effects in any case. It is indicated in congestion from any cause, convulsions due to irritation of the end organs, concussion of the brain, delirium tremens, poisoning by strychnine, etc. It is contraindicated in all inflammatory conditions, and should never be administered when nausea or vomiting is present, although no danger will result, but the fumes being regurgitated through the mouth and nostrils, is alarming to timid patients. In the chills designated *congestive* it is *specific*, but may have to be repeated in twenty minutes to half an hour, never oftener in my experience. Infantile convulsions, due to peripheral irritation, it arrests promptly. Many who read these lines will be surprised at the statement that I have frequently administered undiluted chloroform in teaspoonful doses to infants of two and three years of age during the unconsciousness that follows convulsions, sometimes prying the mouth open, or letting it filter through the teeth. When it gathers in the pharynx it promptly produces reflex action, and is invariably swallowed, producing a profound sleep, from which the little patient always awoke without an untoward symptom, and in no instance did it ever fail to arrest the convulsion. Of late years, however, I use nitrite of amyl preferably in such cases.

The following case, which was reported in connection with the administration of chloroform internally in *The Chicago Med. Examiner*, March, 1869, will illustrate the subject perhaps better than anything I might say. In the summer of 1868 I was hastily summoned to the bedside of a lady whom some hours—twelve, I think—previously I had delivered of a child by podalic version, the case having been one of placenta prævia, and found her just emerging from a convulsion,—the twelfth. She was cold, pulseless, bloody foam issuing from the mouth, with very feeble stertorous respiration. Upon the bureau, near the head of the bed, there happened to lay a tablespoon, and having a vial of chloroform in my pocket, I immediately filled this large spoon *full*, and, prying open the set jaws, poured the whole into the mouth.

It was immediately swallowed, and almost momentarily after the face flushed, the pulse came up full and bounding, the respiration changed to that of natural sleep, and after two hours' peaceful sleep she awoke with some confusion of thought, but nothing worse, and made a rapid and good recovery. This was the largest amount I ever gave at a single dose.

The following case is anomalous. I give it as a physiological—perhaps I should say pathological—curio. John D., an inebriate, addicted to alcohol when it could be had, but would consume laudanum in ounce libations procured from the apothecary when the barkeepers refused him drink or John's friends failed to "set 'em up." One evening he applied for treatment; he was just on the borderland of delirium tremens. It was at a period when I was experimenting with chloroform. Acting on the premise that less than one fluidounce had never proved fatal, I directed that a teaspoonful should be given in a glass of sweetened water every half-hour till sleep ensued, giving, if necessary, seven doses. If this failed to procure sleep I was to be informed. Next morning I saw John bright and early at work painting a house, that being his trade. Now it so happened that I had confided to the attendant of the night before a four-ounce bottle filled with chloroform. Late that evening John appeared at my office with, "Doctor, I would like this bottle refilled." Greatly surprised, it being the chloroform-bottle, I asked him what he had done with the contents. He replied that he had taken a swallow from the bottle as the occasion demanded during the day, and he regarded it as the "finest treatment" he had ever had. Now, the facts are, this fellow had been given six teaspoonfuls the night before, when falling asleep, the attendant retired, leaving the bottle on the mantel, where it was found by the patient in the morning, with the result as stated. He actually swallowed fully twenty-five fluidrachms of undiluted chloroform within a period of twelve hours, performing a large day's work with more intelligence than he usually manifested, and ate three hearty meals, as I learned from his employer.

To the late Dr. A. P. Merrill, of New York, formerly Professor of Practice in the Memphis Medical College, at Memphis, Tenn., is due the discovery of the power of chloroform in drachm doses over chill and congestion. I think there is little doubt that he was the first to administer this large amount for any pur-

pose. My object in writing this communication is due to the fact that chloroform has become so popular as a tænicide, and the idea of giving it in such small doses as I see reported is absurd to me with the experience I have had with the remedy. I first used chloroform for tapeworm in 1869. It suggested itself to my mind after reading a case reported as being successfully treated by sulphuric ether. Theoretically the remedy is plausible. Without doubt chloroform is rapidly vaporized on reaching the stomach, and diffuses itself along the intestinal canal. In my hands it has not proved a brilliant success in these cases. However, the following plan will be found best if it be decided to give it a trial: Let the patient take a fluidrachm, well mixed in a half-tumbler of sweetened water, before rising in the morning, and followed immediately by a brisk purge. Now let the room be darkened and quietude prevail; he will fall into a pleasant and natural slumber, from which he will awaken in one to two hours refreshed, perhaps not until admonished that his physic is ready to operate. As the remedy is harmless, and not unpleasant, it may be repeated as often as desired.

THE TREATMENT OF VARICOSE VEINS.

By J. M. BUZZEL, M.D.

I NOTICED in the GAZETTE of November 16 an abstract of an article published in the *British Medical Journal*, by Dr. J. F. Frye, advocating the removal of a section of the varicose vein in varix of the leg.

I believe that I have found a "more excellent way" of treating this very troublesome disease, and I feel disposed to furnish a brief account of the method of operation and treatment which I have practised for forty-eight years in varix of the leg, and the results of the same.

Up to the time of my graduation but little had been done in the treatment of this disease, except to palliate the sufferings of the unfortunate patient by the elastic stocking or bandage and make an effort to heal up the ulcers which usually accompany this affection of the veins. The surgeon was not able from anything he had read or heard to hold out any promise of a cure of this disease.

Attempts for the occlusion, or rather the obliteration, of the diseased veins were made by pins and caustic, because something must be done to pacify the patient and make

him reconciled to his lot. In view of this dubious state of surgical science upon this subject, I was led to inquire what was the objective-point to be reached in curing this diseased state of the veins. My conclusion was that the old veins that had, by degrees, in consequence of the thinness of their coats, become greatly dilated and overdistended with blood, the circulation in them growing slower as they grew larger, producing heat and discomfort in the limb, must be exchanged for new ones, the blood in the mean time being returned in the deep-seated veins.

The next question, of course, to be settled was, how was this important metamorphosis to be accomplished? The answer to me was plain. If the occlusion or obliteration of a small section of the veins, as had been the object of those who had inserted pins, ligatures, or made caustic sores, had measurably improved, temporarily, the condition of things,—if a little *occlusion* was good, a complete occlusion must be better, if it could be safely accomplished. And the entire arrest of the circulation in the internal saphenic vein, closing all of its tributary branches below the knee at once, seemed to me to be the way to accomplish this most desirable purpose.

Having heard the venerable surgeon, Prof. R. D. Mussey, M.D., in one of his lectures upon this subject, say that, in his opinion, the operation of ligating the saphenic vein was a feasible one, I was determined the first opportunity I should have to make a trial of its operation. And it was not long after I commenced practice before a very interesting case of varix presented for my treatment.

A Mr. J. M., of Standish, Me., about 45 years old, had been greatly afflicted with varix of the *left* leg, which is the one most commonly affected where only one limb is involved, and upon which there was a large indolent ulcer, as large as the hand, having existed there several years.

I stated to the patient my plan for the cure of such cases. M. was ready to trust his life in my hands. I performed the operation, which I had carefully planned, and which I will soon describe. I placed the patient in a proper position, covered the ulcer upon the leg with simple diachylon plaster, bandaged the limb, and kept the patient confined to his bed about three weeks; when, upon removing the bandage, the aspect of the limb was as natural as the other, the ulcer having healed entirely, and the new and perfect veins showed themselves when the foot was put upon the floor, the old veins being entirely obliterated.

By the use of an elastic stocking, which I always recommend, to prevent the new veins from becoming distended and tortuous like the old ones, he lived some twenty-five years with no return of the disease.

Although I have had several cases with favorable results, I will refer to but one other case, which was, I may say, a bad one.

R. V., an elder in the family of Shakers, at Lebanon, N. Y., about 40 years of age, came to me with varix of the left leg. The veins were extremely large, the saphenic vein, from the knee upward to its emergence into the groin, being as large as a broom-stick.

I stated to the patient what I had done, then several times, and the results. He submitted to the operation and treatment, although warned by a surgeon in a college in the State that it would "kill him." But he lived through the operation, had a new set of veins, and, by the proper support of the leg, he has had no return of the disease. I had a letter from him eight years after the operation, and he reported that he had no varicose veins upon his leg.

I will now, as briefly as I can and make myself understood, describe the operation and treatment. If there are unhealthy *ulcers* upon the affected limb, I endeavor to improve their condition so as to show a healthy state of granulation. I then wash the limb with some antiseptic mixture, latterly the carbolic solution, and apply over the ulcer a diachylon plaster. The next step of the operation is, by the aid of the right thumb and forefinger of an assistant, and of my left, to pinch up the integument directly over the saphenous vein upon the inside of the knee, where it is easily found, and passing a bistoury through the two folds of integument, with the back of the bistoury towards the vein, cutting from within outwards, I make an incision about three-quarters of an inch in length, which will bring the vein plainly into view. I then pass a ligature beneath the vein, taking care not to include the nerve that accompanies the vein, but do not tie the vein in this stage of the proceedings. I then raise the foot as high as convenient and commence the application of a bandage, which I apply closely upon the limb from the toes up to the knee, forcing the return of the blood in the veins as much as possible, with the hands in advance of the bandage. When the bandage has reached the knee, I tie the vein, not so tight as to divide its coats, but simply to arrest the upward movement of the blood in the vein, leaving one branch of the ligature out, and the wound is dressed with

plaster. I then keep the foot and leg raised as high as comfortable to the patient, and keep the whole limb wet with cold water with the carbolic acid solution, with the occasional use of the tincture of arnica or lobelia, and paying particular attention to the state of the wound, which to the feel is somewhat tender and slightly inflamed. After the ligature becomes loosened, I cut one branch and remove it, as there is no longer any need of it.

In every case I have had the patient has been comfortable throughout his confinement, having no fever, swelling, or pain. I have given internally, after a few days, aconite, Seidlitz powders, etc., to *prevent* inflammation, fever, etc.

PILOCARPINE IN TOOTHACHE.

MR. A. P. KURZAKOFF, according to the *Medical Press*, November 4, 1885, states that hypodermic injections of pilocarpine will relieve toothache. A solution of 2 grains of the salt in $\frac{1}{2}$ ounce of distilled water was used, the injection being made into the temporal region on the side of the odontalgia. In two of the cases one-eighth, and in a third case one-quarter, of a grain of the salt was injected. In all the cases pain disappeared permanently in about an hour after the injection; about the same time salivation and perspiration (caused by the drug) also ceased. In one of the cases, in that of a man, *æt.* 46, with rheumatic periodontitis associated with agonizing earache, the injections (of a quarter of a grain) produced profuse vomiting, with cyanosis, general weakness, and drowsiness, all of which symptoms disappeared in about an hour and a half after taking 20 drops of tincture of valerian. The author thinks that this simple plan of treatment fully deserves a further and more extensive trial.

THE INCOMPATIBILITY OF ANTIPYRIN.

DR. ECCLES states in the *New York Medical Journal*, October 24, 1885, that he has found that sweet spirits of nitre is incompatible with antipyrin. When he has used antipyrin added to sweet spirits of nitre, the mixture at first is clear and colorless, but becomes green with some hours' standing. Since antipyrin is a coal-tar product, Dr. Eccles believes that the change of color is due to the formation of a green aniline. This incompatibility is worth remembering, since both antipyrin and sweet spirits of nitre are antipyretics, and might be prescribed together.

The Therapeutic Gazette

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Leading Articles.

TE SALUTAMUS.

AS this is the first birthday of the THERAPEUTIC GAZETTE since its adoption into the family of its present parentage, it is but right that we should sincerely thank the profession for the support which has been given to us, and acknowledge with humility the many congratulations which we have received concerning the growth of our adopted child.

If permission be granted we would also like to philosophize a little, and to say a few things to our contributors and to our readers concerning the spirit which should possess all of us as therapists. Our art of healing is at present far from complete, although the record of the past twenty years is one of which we may well speak with pride. Old remedies have been found to possess new features; new remedies of value have been added to our lists; great generalizations have been determined; knowledge has been perfected in detail; previously unknown territories have been more or less explored; and at the same time

a therapeutic momentum has been acquired which must carry forward the profession upon this line of progress with ever accelerating rapidity. Wherever, however, there is in nature excessive vitality and vigor, there is always a tendency to irregular development, to the formation of all kinds of straggling growths, to the production of weeds, and to general rankness. So, it seems to us, it is in therapeutics. We acknowledge that in the present more than at any past time new remedies of no value or of little value are being praised without number and beyond measure, but we recognize in such outrunnings the presence of an excess of vitality. This explanation may be satisfactory to our pride, but the facts remain, and as editors of the leading therapeutic journal of the world we feel that, if ever the hoe and the pruning-knife of criticism were needed in pharmacology, it is at the present moment. Most earnestly would we call the attention of writers of general treatises on therapeutics to the great importance of their not dogmatically asserting as true that which is unproven. The effort should be unceasing to weigh evidence with the greatest care, and there should be an ever present fear of sacrificing truth to an appearance of perfection. Better always is it to leave the therapeutic edifice jagged, uncouth, and unfinished than to put up a superstructure which the first storm shall cast down, and whose ruin shall involve the good with the bad.

The therapeutic observer and the writer of individual papers also at present seem to us to need a caution. Brilliant theories, important discoveries of apparent facts so rapidly attract attention and are so easily made, whilst close observation and permanent results require so much toil and are so often barren in immediate glory, that the temptation to give reins to the imagination comes almost as strongly to the modern physician as did the carnal visions to St. Anthony; but as did St. Anthony, so ought we also to resist even to the death.

The spirit which should rule the minds of all therapeutic co-workers is that of scepticism. Let us believe nothing until it is proven. It can do no harm to wait a little until an alleged fact or a plausible theory is established; but great injury may result from an untrue allegation or a false theory gaining foothold and rooting itself, so that its influence shall continue for years. Possibly scores of children, certainly many lives, have been sacrificed in the last ten or fifteen years to the

theory that the chlorate of potassium yields its oxygen in the blood, and thereby purifies the vital fluid. A theory as baseless as it is ingenious and attractive, but which still has its advocates, and which within a few weeks we saw taught by a learned professor to a gaping crowd of students,—a theory which led in practice to the immoderate use of the chlorate in diphtheria, and no doubt to a notable increase in the death-roll.

Another theory almost as universally believed in and almost as groundless as the one just spoken of is that which attributes the effects of the bromide of potassium upon the nervous system to contraction of the finer blood-vessels, and the consequent production of cerebral and spinal anæmia. How many pages have been written in regard to this theory! What great discourses and imaginings concerning the nature of epilepsy and various other diseases have been built upon it! How it still permeates neurological writings! and yet there never has been a single well-observed fact supporting it. Evolved out of the inner consciousness of the neurological clinician, it has been swallowed by a profession whose gullibility is still marvellous and triumphant.

Some seventeen hundred years ago Galen wrote at the end of his great treatise,—*περι χρεας των εν ανθρωπου σωματι μοριων*,—that his anatomical facts and studies were so many hymns sung before the gods.

What discords of false notes! what pæans of unbridled imagination have these our therapeutic hymns contained! Let us strive that in the future our songs shall be as redolent of cleanly-winnowed truth as they have in the past been heavy with the dust of falsehood.

The scepticism the therapist ought to encourage is not one as to the value of drugs in the treatment of disease. It is as to the assertions made concerning new drugs, and as to theories which are brought forward to explain the action of old and new drugs. The editors of the THERAPEUTIC GAZETTE can perhaps best express their appreciation of drugs by an anecdote concerning the late Dr. George B. Wood. This eminent therapist was accustomed to say that when any physician came to him and professed lack of faith in the efficacy of medicines, he always replied that this lack of faith must rest upon the physician not having used drugs properly, because the results to be achieved by the proper use of remedial measures are so apparent that they can be seen at once.

CHLOROFORM BY THE MOUTH.

BOTH to the toxicologist and therapist the local as well as the constitutional effects of chloroform when given by the mouth are of interest. There can be but little doubt that much of the curative influence of the drug when so administered is the result of the peculiar irritation which it produces in the gastro-intestinal tract; and it is hardly conceivable that in cases of exhaustion or of failure of the circulation the sudden arousing sometimes produced by draughts of chloroform are caused by any direct general or constitutional action. Careful experimentation upon the lower animals, made by various observers, shows that any influence this drug after absorption exerts upon the circulation is one of depression. Under its influence the arterial pressure falls steadily; at no time during the action of the drug is the arterial force increased unless the respiration be affected. Any one who has stimulated a sensitive nerve in an animal whose artery is connected with the manometer must recognize the enormous influence which such stimulation has upon the blood-pressure. The gastro-intestinal tract of man offers an enormous surface upon which are outspread everywhere afferent nerves, and any severe irritation of this surface must have an immediate effect. When the woman who is suffering from faintness has ammonia held to her nostrils the irritating vapors bring about reaction by their influence upon the nerves in the nasal mucous membrane. That the rousing of the circulation is under these circumstances not the result of any absorption of ammonia, and consequent direct stimulation of the heart, is shown by the minute quantity of the ammonia necessary and the rapidity of the effect.

The immediate flushing of the face which is produced in some people by small doses of alcohol is also not the result of a constitutional action of the drug, but of the irritation of the gastric mucous membrane which it causes. This has been frequently verified by the writer in a case which has long been under his care. In this patient two or three teaspoonfuls of wine will produce almost instantaneously a facial coloration which might put to blush that of a boiled lobster. If the wine be freely diluted this congestion of the face does not occur; and if vinegar be taken instead of wine the effect upon the face is precisely as though alcohol had been ingested. Certainly acetic acid, taken in the form of one or two teaspoonfuls of vinegar, has no instan-

taneous direct effect upon the heart or blood-vessels.

The local effects of chloroform are far more severe than are those of alcohol, and it is hardly open to doubt that it is these local effects which produce sudden awakening from a faint. The severity of these effects is revealed by the severe gastritis which almost universally follows poisoning by chloroform given by the mouth; whilst the jaundice which in many of these cases accompanies the gastritis shows that the chloroform penetrates everywhere through the abdominal viscera. In a few cases death has resulted after a lapse of as much as eight days from this secondary gastritis (see *New York Med. Record*, July 11, 1885). After death from chloroform taken by the mouth anatomical evidences of gastro-intestinal inflammation have been very pronounced.

The amount of chloroform that is required to kill when swallowed varies very greatly. Evidently this is in part due to the variability in the rate and completeness of absorption of the drug through the gastro-intestinal mucous membrane. Taylor describes a case in which recovery occurred after ingestion of four ounces; but according to L. Lewin a single drachm has produced death. In our opinion under no circumstances is the practitioner justified in giving by the stomach more than half a drachm at a single dose. The drug meets no indication which cannot be equally well or better met by the less dangerous remedies, and we cannot see that a practitioner is justified in taking the risks. Indeed, we doubt whether chloroform ought to be used at all internally, excepting as a local remedy in cases of gastric or intestinal neuralgia or spasm, or other similar affection. In cases of colic, with or without diarrhoea, and in cases of sudden nervous diarrhoea from intestinal relaxation, it is invaluable; but under these circumstances the dose should not exceed 25 drops, to be repeated *pro re nata*.

ACCIDENTS WITH HYPODERMIC MEDICATION: HYOSCINE, MORPHINE, ELATERIUM.

THE numerous reports which have been made upon the use of hydrobromate of hyoscine seemed to have settled that it is a drug of very great value, whose especial application is in cases of sleeplessness, combined with great excitement of the cerebral cortex. As yet no case of poisoning has been re-

corded, but it may be remembered by some of our readers that Dr. Wood, in one of his articles, called attention to the fact that in two cases he had seen evidences of paralysis of the laryngeal nerves, with consequent symptoms of sudden suffocation, under its use. In a recent case which occurred in the practice of Dr. M. O'Hara, of Philadelphia, $\frac{1}{8}$ of a grain administered hypodermically is said to have produced very serious consequences. There was no sleep or dilated pupils, but paralysis of the pharynx, suffusion of the face, loss of power of articulation, fever, with great muscular relaxation, and partial loss of co-ordinating power, lasting for twenty-eight hours. After recovery there was a total lack of remembrance of occurrences which took place during the seven hours following the taking of the medicine.

In the administration of minute doses of medicine the doctor is so entirely at the mercy of the apothecary, and it is so difficult, without expensive chemical analysis, to prove that the solution used had the strength ordered, that there is always a suspicion in cases like the present that more of the alkaloid was injected than was intended. The mere assertions of the druggist must count for nothing, as if he had made a mistake he would probably not be aware of it, and even were he aware of the blunder, to convert knowledge into acknowledgment would hopelessly strain ordinary human nature. It is possible, however, that there may be individuals whose idiosyncrasies are such as to render them highly susceptible to the action of this drug, and that the symptoms were caused by the $\frac{1}{8}$ of a grain. We once injected hypodermically $\frac{1}{2}$ (according to the prescription) of a grain of morphine into the arm of a patient, who fell back, apparently dead, inside of one minute after the time that the piston of the syringe was thrust downward, and who was only saved by long and most assiduous treatment. We have always believed that in this case the drug was thrown directly into a vein, and carried in a concentrated condition to the heart and nerve-centres. The hypodermic administration of remedies is liable to dangers which can only be partially provided against.

We have had detailed to us, by a physician in the United States, a case which occurred in his own practice, which seems worthy of being here noted. For obvious reasons the name of the physician is omitted, but there can be no doubt of the authenticity of the statements. In order to produce vomiting

and purging in a case of severe narcotic poisoning, elaterium was used hypodermically. The injection was followed in the course of a few minutes by free emesis and purging and very severe local irritation, ending in abscess. A few days later the patient was attacked with tetanus, which ran a rapid course to a fatal termination.

In connection with hypodermic injections may be mentioned the necessity, not always appreciated, of keeping the needle absolutely clean. This applies with more force to hospital than to private practice. We have seen patients to whom we were giving daily hypodermic injections without any local trouble, who then went into the hospital, and on a continuance of the treatment suffered from a series of abscesses. These abscesses were attributed by the hospital authorities to the bad state of the constitution, but were really due to septic poisoning from a dirty needle. The hypodermic needle in every hospital should be habitually kept in a strong carbolized oil.

In order to avoid throwing the medicine directly into a vein, the point of the needle should be withdrawn a little after being plunged deeply into the tissue. Do what we may, however, a certain amount of danger accompanies the hypodermic injection. A risk which is not sufficient to interfere with our using the method when there is any distinct call for its employment, but which is too great to warrant that perpetual employment of the syringe that is practised by some physicians.

HYPNONE, THE LATEST HYPNOTIC.

THE readers of the GAZETTE, who by this time take it for granted that nearly each month presents to the medical world a new antipyretic, anæsthetic, or at least hypnotic, will not be disappointed even by the issue of this number of the GAZETTE. "Hypnone" is the auspicious label of the long-looked-for ideal hypnotic. Dujardin-Beaumetz presented to the Academy of Medicine on the 10th of November his first results of a series of observations made with phenyl-methylacetone, to which drug he gave the name of "hypnone." Popoff, of Warsaw, had previously examined hypnone as to its chemical properties, and ascertained that it was decomposed in the organism into carbonic and benzoic acid, and that it appeared in the urine as a hippurate. Dujardin-Beaumetz found that the drug produced a deep physiological sleep in adults when exhibited in doses ranging from $\frac{3}{4}$ to 2

drops; he gave it mixed with some glycerin in gelatin-capsules. In alcoholic subjects it acted decidedly better than either paraldehyde or hydrate of chloral. Altogether the drug was tried in nine cases and produced no undesirable secondary symptoms, nor could any intolerance be observed; the breath simply was noted to be unpleasant when the drug evaporated from the pneumonic surfaces. In guinea-pigs subcutaneous injections of $7\frac{1}{2}$ to 15 drops produced a remarkably profound and stupor-like sleep, which gradually assumed a comatose nature, in which, after five to six hours, the animal perished. Dujardin-Beaumetz regards hypnone as a powerful, pure hypnotic, and anticipates the best of success with the new drug.

According to the *Gaz. Hebdomadaire* of November 20, 1885, Dujardin-Beaumetz again emphasized in the Academy the fact that hypnone will act promptly in cases of insomnia depending upon cerebral hyperexcitation, but will prove wholly useless in insomnia caused by pain. A clear and specific indication of this nature is of course much more apt to win confidence than the *à tout cas* eulogies of new remedies to which we have been of late accustomed, especially from German quarters. The claim that hypnone is actually well borne by the stomach would, if found to be a just one, of course materially enhance the value of the drug, as the principal objection to all ordinarily-employed hypnotics is less a want of activity than their ill effects on the digestive tract.

The drug itself is by no means a discovery of a very recent period, as Friedel had extracted it already in 1857 from the products of distillation of benzoate and acetate of calcium. He represented the drug by the formula of $C_6H_5 - CO - CH_3$. It crystallizes in large flakes, becomes fusible at 15° (C.), boils at 98° (C.), and has a density of 1.032. Its taste is hot, and its odor resembles that of bitter almonds and oil of wintergreen together.

Four to ten drops taken at once are, according to Dujardin-Beaumetz's statement, sufficient to produce a refreshing and sufficiently long sleep. It is best taken in either of two preparations, as advised by Pierre Vigier, viz., a syrup or elixir. The syrup of hypnone is prepared as follows:

R Hypnone, gtt. i;
Alcohol (90°), ℥xvi;
Syr. aurant. flor., ℥lxxx;
Syr. lauro-cerasi, ℥xvi.

The drop of hypnone is put in the alcohol,

the syrups are then added, and the whole liquid is well stirred. A child would have to take at least double the quantity of the above mixture so as to get 2 or 3 drops, while an adult would require at least four such doses.

The elixir is prepared as follows :

R Hypnone, gtt. i ;
Alcohol (60°),
Spir. menth. pip., aa m℥.

To be prepared in the same manner as the syrup.

REMARKS ON ALCOHOLISM.

WE hear a good deal in this country of the untoward effects which alcohol in any form is supposed to exert on the human economy, but rarely ever a plea in its favor. That even an habitual use of alcoholics under certain conditions—aside of medicinal alcoholic preparations—may exert a favorable influence on nutrition few therapeutists would venture to deny. To the poor workingmen, who lack the advantages of a proper and regular diet, who, in scanty clothing, are exposed to the various changes of temperature and season, alcohol forms an indisputable nutritive factor of the highest type ; it is, in other words, an irreplaceable and necessary article of diet for the working-classes. The question of excesses and their consequences belongs only partly to the régime of the therapeutist,—viz., as far as the effects of alcoholic excesses on the body are concerned,—while their moral and social sequelæ ought in no way concern the therapeutic investigator.

Lanceraux, of Paris, recently delivered an interesting lecture on the subject before the Parisian Academy, which, as seen in the report of the *Gazette Hebdomadaire* of November 20, 1885, brings this subject into fresh prominence.

Alcohol seems to have a direct power to shorten the duration of human life ; at least Lanceraux, who has studied this subject for about twenty years with great care, has come to this conclusion. "Fifty or sixty years," this author says, "is the highest age ever attained by alcoholists."

In the first place, it would not be an easy matter nowadays to exactly define the word alcoholist. Some of our readers might differ in this respect, and say it is easy enough to define an alcoholist. An alcoholist is a person, they would say, who daily or habitually, at least for a certain protracted and usually continuous period of life, is or has been indulging in such excesses of alcohol as to

have suffered physical and moral losses. A closer investigation, however, will soon convince us that this definition—which, by the way, we actually encountered some time ago in a medical journal—is exceedingly unsatisfactory, nay, actually improper. We venture to say that it would suit four-fifths of all students and teachers of a French or German university. As peculiar as this statement might appear on first sight, any one familiar with the usages of the Continental academic circles will readily confirm it. Hence, we repeat, Lanceraux's expression, "alcoholist," is an exceedingly vague one, and scarcely admits of a strict and satisfactory definition. If, based on statistics, this author assigns to alcoholists no higher duration of life than fifty or sixty, he would find some noteworthy exceptions in our Philadelphia Hospital,—the pauper department,—where we could introduce to him a number of bibulous veterans approaching closely a centenary. Our French author has also evidently forgotten Homer's account of the most venerable of all tipplers, Nestor, who attained an age of treble an ordinary duration. Fifty to sixty years is by no means a bad average ; but, on the contrary, a very acceptable one, and Lanceraux will not be able to frighten many drinkers by such statistical facts. It would be interesting to know how many tubercular subjects, who at the same time indulged in the cup, attained the age of fifty or sixty years. If Lanceraux could count up even a moderate number among his statistical material, it would be a strong indication for every otherwise doomed tubercular person to try alcoholism with the view of prolonging life.

Lanceraux has paid special attention to the comparative physiological results of the various alcoholic beverages, and pronounces some very sensible, though to many Americans occasionally surprising, axioms. "Cider, beer, and even wine, if properly prepared and not adulterated, are in every respect," says our author, "wholesome beverages, the use of which ought to be encouraged." He admits, however, that wine is capable to lead to a man's social ruin, though he does not refer to any possible deleterious effects on the constitution. Here our author makes the interesting statement that the craving for wine is readily transmissible to the progeny. We doubt, however, that this theory, at least in such unqualified a condition, can be accepted. As to the actual commercial spirits, such as brandy, whiskey, rum, gin, etc., Lanceraux asserts that the results of excesses do not limit

themselves to the drinking persons exclusively, but are, as we readily accept, extended to their offspring. The pathological phenomena subsequent to alcoholic excesses are principally alterations of sensibility, of movement, of the vasomotric and the intellectual functions. In the offspring of alcoholic indulgents it is exceedingly common to find nutritive deficiencies and certain peculiar constitutional conditions which prove a ready predisposition to tuberculosis. Lanceraux concludes his interesting essay by advancing certain pertinent propositions, which might be suitable for France, but would be rather out of place in America. He recommends absolute liberty for the sale of every alcoholic beverage, a strict superintendence of the sold material, repeated official examination of them, an immensely higher duty on all alcoholic spirits, the necessity of a strictly moral character of every vendor, and the distribution of prizes for the preparation of the most wholesome alcoholic beverages.

IODOL, A NEW ANTISEPTIC.

IODOL (C_4I_2NH) was first produced synthetically in 1883, by Messrs. Ciamician and Dennstedt, by the action of iodine on pyrrol (C_4H_7NH) in the presence of caustic potash. Its reaction is slightly acid, and it is free from the penetrating and disagreeable odor of iodoform. It exists in the form of a brown amorphous powder, insoluble in water, slightly soluble in cold alcohol, and readily soluble in warm alcohol, ether, and acetic acid, and in oil. It contains eighty per cent. of iodine. Iodol may be warmed to $100^\circ C.$ without undergoing decomposition. At higher temperatures iodine vapor is given off, and a carbonaceous mass remains. From its alcoholic solutions it is precipitated by water, but not by glycerin. When warmed with nitric acid, the alcohol solution turns bright red, and in sulphuric acid dissolves with the formation of a green color. Clinical experiments made with this new product are as yet too incomplete to enable us to form any decisive opinion as to its value. According to Dr. Mazzoni, it is an even more powerful antiseptic than iodoform, is entirely free from the odor of iodoform, and has not yet produced any symptoms of poisoning. It appears also to act as a local anæsthetic, and favors granulation. Applied locally to chancroids, iodol produces the same effect as salicylic acid. A one hundredth per cent. solution in oil in-

jected under the skin produces no reaction, while the passage of iodine into the urine has been determined. Administered internally in doses of 2 grains daily, the iodol is said not to produce the slightest trace of intestinal irritation.

TREATMENT OF HYSTERIA IN CHILDREN.

ALTHOUGH numerous affections of the infantile phases of life, even those of the nervous system, assume, without therapeutic interference, in the course of time, a very benign type and disappear wholly through nature's own restorative and recuperative power, the physician is nevertheless frequently enabled to exert a direct favorable influence upon the morbid process. The numerous types of nervous hyperexcitation occurring in children, unless a grave hereditary predisposition exists, allow usually of a favorable prognosis, though their frequently observed rebellious nature, and the possible danger of establishing a habit, call for a careful medical treatment. We find in the *Wien. Med. Wochenschrift* of November 14 an instructive paper by Dr. Herz on the treatment of hysteria in children, which is worthy of a brief representation in the GAZETTE. Omitting the author's remarks on the etiology and pathology of the affection, we shall simply review his ideas of treatment.

The first and most important indication in infantile hysteria is the strengthening and rehabilitation of the weakened organism, and especially of the central nervous system, by the various dietetic, hygienic, and medicinal measures. Next in importance stands the tranquillization of the physical and mental excitation, either by direct medication or by appropriate psychical influences. The last factor is often obtained by an apparent disregard of the affection, actual or only threatened removal of the child from its domestic surroundings. There are cases on record in which an actually curative effect was gained by various threats, such as to cut off the hair, burn the spine, or perform an operation. These means have been found to be especially efficient when the hysteria resulted not primarily, but on account of the child's association with other hysterical children.*

Anæmia and chlorosis, whenever they exist in an hysterical child, as is so often the case,

* This singular mode of acquiring the hysterical habit has also been observed in the Hospital of the University of Pennsylvania some four-years ago.

of course have to be treated by the well-known measures.

Various authors, especially Jacobi, of New York, have lately called attention to the rôle that masturbation in either sex plays in the etiology of hysteria. It is hence necessary to see that this nefarious practice is checked, if found to exist, and rendered as nearly inexecutable as possible by appropriate means. As various sources of irritation emanating from the genital organs, such as phimosis, the aggregation of smegma under the prepuce, and in girls an elongated clitoris, often lead to masturbation, the genital organs should receive a careful examination and eventual treatment. Painting the vagina twice daily with a ten per cent. solution of cocaine has been found to be an able agency in subduing the hyperirritation of the sexual organs in girls accustomed to practise masturbation.

As to the direct therapeutic treatment of hysteria in children, our author agrees with Hensch, the acknowledged highest authority on children's diseases, that there is no specific remedy for it. Hensch prefers the hydrate of chloral to all other medicines, though he regards morphine as almost equally valuable. The former he prescribes in 0.5 to 1.00 doses ($7\frac{1}{2}$ to 15 grains); the latter, both internally and hypodermically, in 0.005 to 0.01 doses ($\frac{1}{12}$ to $\frac{1}{8}$ grain). Inhalations of chloroform, though ordinarily exerting only a transient salutary influence, will be found requisite in the occasional paroxysms involving the laryngeal organs. Arsenic and quinine are highly prized by some practitioners, but they possess likewise no constant value. In view of the so frequently underlying anæmic base, small doses of iron and arsenic, continued systematically for a long period, will invariably be found useful. Warm baths, applied frequently, and lasting fifteen to thirty minutes, fresh air, and nourishing food, are always highly commendable in every case.

As especial sedatives of the overexcited nervous system, the bromides of potassium and ammonia and belladonna have always been held in high repute. A combination of bromide of potassium and chloral hydrate appears to act especially well. It is advisable to give 15 grains of bromide of potassium in the morning and afternoon, and 7 grains of chloral hydrate at night, and to combine later both remedies, as follows:

R Chloral. hydrat., gr. xv;
Pot. brom., gr. xxx;
Aq. dest., f̄ssiii. M.

S.—Two teaspoonfuls every two hours.

After continuing this medication for some time, the following combination of arsenic and iron recommends itself:

R Liq. pot. arsenit., gtt. xv;
Ferri ox. hydr., f̄ssii. M.
S.—A teaspoonful twice a day.

Later the iron is suspended and the arsenic retained alone. Politzer, of Vienna, regards the hydrobromate and bihydrobromate of iron as two very valuable preparations in the hysteria of children, and exhibits them in doses of 4 to 7 grains three to four times daily. The same therapist recommends also the tincture of belladonna, 3 drops *pro die*, gradually increasing the dose up to 5 drops, and then gradually decreasing again.

The application of cold baths, and even of electricity, cannot claim to have produced any satisfactory results.

TREATMENT OF SYPHILIS BY SULPHUROUS WATERS.

BOTH the profession and the laity are at the present day fully aware of the fact that the drug-store is by no means the only source and medium of alleviating or curing diseases. The high therapeutic value of such agents as air, light, and water, formerly almost wholly overlooked, is being more and more understood and appreciated. Though the numerous medicinal uses of simple water are as highly prized by the American practitioner as by his European colleagues, it seems to us, as we have repeatedly suggested, that the thermal waters have hitherto in this country not received the full attention to which they are entitled. The paper of Dr. Doit (appearing in the *Gaz. des Hôpitaux*, October 24, 1885), treating of the action of sulphurous waters in syphilis, is all the more worthy of our attention as it refers to an affection the therapeutics of which are far from being satisfactory. The following *résumé* comprises the principal conclusions of Doit's paper:

1. The sulphurous waters can, under certain conditions (to be referred to later), aggravate the syphilitic troubles.
2. They must ordinarily, however, be regarded as curative of the affection.
3. They serve to distinguish syphilitic from other affections by their therapeutic results.
4. They expose latent syphilis.
5. They assist in the differential diagnosis of simple and syphilitic cachexia.

6. They prevent mercurial accidents.
7. They assist the curative effects of especial syphilitic remedies.

8. They are an excellent agent of proof whether or not a syphilitic individual is cured.

The physiological action of sulphurous waters (applied in form of potions, baths, or douches) consists chiefly in a vigorous excitation of the nutritive and absorbent organs of the economy, thus inducing not only a heightened tone of the digestive functions and increasing the resistance of the organism against the specific etiological entities (Lustgarten's bacilli?), but allowing also of a ready elimination of deposited foreign matter.

The aggravation of syphilitic troubles, mentioned above, is only an exceptional phenomenon, and occurs in persons who, while undergoing a thermal treatment, contract syphilis. The syphilitic cell proliferation is then found to be sustained, and even favored, and the indurations noted to progress speedily. In cases where chancres make their appearance the ulceration is likewise found to increase if the use of the water is persisted in.

Too active or too protracted an application of the sulphurous water may also aggravate the secondary symptoms.

The ingestion of mercurial salts continued, as it is often the case, for a year or longer, though favoring the reabsorption of the deposited matters, is very apt to prove a serious obstacle to the parenchymatous tissues by forming mercurial albuminates. The sulphurous waters will then render these products fluid, and make them enter the circulatory channels. At the same time they thus restore to the mercury its curative effects, and allow of its elimination from the system.

A PECULIAR PHENOMENON IN CEREBRAL, AND ESPECIALLY IN MENINGITIC, AFFECTIONS.

WHILE presenting a meningitic patient to the class on the 1st of December, Prof. Henoch, of the Berlin University, called attention to a peculiar symptom almost invariably observable in cerebral, and especially in meningitic, affections, which, on account of its diagnostic value, deserves to be remembered. The patient, on being examined, did not present any muscular contraction in either the legs or arms, but if the thigh was flexed at right angles to the abdomen, great muscular rigidity and contractions at once set in, which prevented the part from being extended.

The same phenomenon, though not so conspicuously, could be noted in the arm. This peculiar condition, Henoch said, pointed invariably to a cerebral affection, and possessed an especial value if the meningitic lesions were in the initiatory stage and presented few or no other symptoms.

Examining the literature of this noteworthy phenomenon, we find in the *Berl. Klinische Wochenschrift* of November 23, 1885, that Dr. W. Kernig, of St. Petersburg, was the first to describe this symptom, and to attempt to furnish a rational explanation of it. This author observed the stated symptom in fifteen cases of inflammation of the pia mater, thirteen cases of which were epidemic cerebrospinal meningitis, one a tubercular and one a purulent meningitis. Besides, he noted the same occurrence in six other cases, viz.: bloody extravasations of the cerebrum and the meningeal membranes, pachy- and leptomeningitis, after thrombosis of the transverse sinus. The symptom appeared in the beginning of the several affections, lasted during the entire course of the disease, and was even demonstrable after convalescence had set in.

We likewise find that Dr. Ed. Bull, of Christiania, observed this contraction symptom in three cases, one of which was a tubercular meningitis, the second a cerebral tumor, and the third a thrombosis of the transverse sinus.

An explanation of this singular phenomenon appears not easy, though it is evident that the contraction must be classed among the neuropathic spastic appearances. Its origin seems central, though a peripheral reflex influence may also participate in its causative agencies.

Examining in normal individuals the extended knee-joint, if the hip-joint is kept at the same time in a flexed position, we find that a perfect flexion of the knee is usually only possible if the angle between thigh and abdomen amounts to but little less than 90°. If, on the contrary, the thigh is flexed strongly towards the abdomen, forming an acute angle, the knee-joint cannot be made to form an angle of 180°; the knee forms an obtuse angle, and a further flexion is prevented by the tension of the muscles on the back of the thigh. These remarks are not superfluous, as they show that under normal conditions a similar contraction occurs, which of course ought not to be mistaken for a symptom of meningitis. To avoid errors, it is best to bend the knee-joint at an angle of 90°, which is most appropriately effected by

making the patient sit on the margin of the bed.

HOW OUGHT "ANTIPYRIN" TO BE SPELT?

THE name of "antipyrin" is, we believe, uniformly spelled in the German journals "antipyrin," whilst the English, and probably most of the American, journals spell it with the termination of "ine." For the purposes of correct nomenclature it is important that some decision should be reached as to what really is correct in the matter. To do this it is essential that the chemistry of it be understood, and we therefore give a brief abstract of such chemistry.

Di-methyloxyquinizin, or di-methyloxychinizin (German), is prepared from methyloxyquinizin, the formula of the latter being $C_{10}H_{10}N_2O$.

Di-methyloxyquinizin, or antipyrin, according to its formula, is two molecules of methyloxyquinizin minus two atoms of hydrogen, as

$$2C_{10}H_{10}N_2O - 2H = C_{20}H_{18}N_4O_2$$

Methyloxyquinizin. Di-methyloxyquinizin, or antipyrin.

Di-methyloxyquinizin possesses most of the chemical properties of methyloxyquinizin. It is chemically a base, and also an acid. Its acid-salts are destroyed by the action of water. From an alkaline solution it is precipitated by carbon di-oxide (CO_2). Ferric chloride produces with it in solution a deep red coloration, and will show its presence down to the $\frac{1}{100000}$ part. In dilute solution of antipyrin, nitrous acid produces a bluish-green color, delicate to the $\frac{1}{10000}$ part. In concentrated solution of the substance nitrous acid causes the formation of green crystals. These reactions depend upon the formation of iso-nitroso-antipyrin $= C_{20}H_{17}N_3O_2$.

A study of the chemistry of antipyrin shows that there really is a room for doubt as to what the nomenclature should be. It is well known that the termination "ine" is used in the British and United States Pharmacopœias to name an alkaloid. From one point of view antipyrin is an alkaloid, and deserves therefore the termination "ine." On the other hand, it is also an acid, and the termination "ine" is repulsive to its nature: scientifically here is a dilemma. It is important to decide whether this creature is fish or fowl, but it must be remembered that antipyrin is a proprietary medicine, since it is a chemical compound whose discoverer has patented it and in doing so has named it. Under these circumstances, when there is a doubt as to the scientific accuracy, it seems to us that the name

should be spelt as the discoverer himself spells it, and in the original article it was spelled "in." We therefore think that "antipyrin" is more correct than "antipyrine," and shall endeavor to spell it hereafter in this journal "in." Only, however, when the seal of authority is given by the United States Pharmacopœia either to "in" or "ine" can the point be considered definitely settled. Whichever way the learned men who preside over the pharmaceutical destinies of the United States decide, we will bow with due submission.

VACCINATION.

THE relation of the number of vaccinia pustules to the protective influence of the vaccination has recently been made the subject of elaborate study by a German Commission, with results which are so important that we hope our readers will give them their due weight. The almost universal custom in this country is to vaccinate in a single place, but the Commission came to the conclusion that two is the minimum number of pustules which ought to be made in a protective vaccination, and some of the members affirmed that three is the least proper number. Dr. R. Koch, of the Stockwell Hospital, found that out of seven hundred and three smallpox patients, of those having no scars there died 47 per cent.; poor scars 25 per cent.; one good scar 5.3 per cent.; two good scars 4.2 per cent.; three good scars 3.3 per cent.; four or more good scars 1.1 per cent. He believes that the protective power of vaccination is in direct relation to the number of vaccinia pustules. It has been an American custom to vaccinate upon the arm, and we well remember the late Prof. Pepper telling in his lectures how that a baby, throwing its arm suddenly, knocked the charged lancet out of his hand, when, as ill luck would have it, the point struck the end of the little nose, and of course the vaccination took at that place. The infant grew to be a Philadelphia belle, who to her dying day never forgave the doctor for having put the seal of his protective goodness on the end of her nose. There is no sense in disfiguring the arm with a vaccination-mark. According to our opinion, vaccination should always be practised in the upper portion of the leg or the lower part of the thigh, and, in the light of the German researches, there should be at least three insertions; probably it would be better to utilize both legs.

A NEW AMERICAN SCIENTIFIC PUBLICATION.

FIRST-CLASS original researches in scientific medicine are so rare in America that the advent of a new series of publications seems to us worthy of editorial notice. We have looked over, with great pleasure and pride, the studies from the laboratory of physiological chemistry of the Sheffield Scientific School of Yale College, recently put forth under the supervision of Prof. R. H. Chittenden. Such of the articles as have direct bearing upon therapeutic problems will be noticed separately in the department of Progress, and therefore no analysis of the volume is here required. It does seem right, however, to congratulate Prof. Chittenden in being so placed that he is able not only to obtain time for research, but a definite channel of publication, and also to congratulate Yale College on having found a professor who is both able and willing to contribute original matter of great value to the world's store of scientific knowledge.

BACILLI IN LAUDANUM.

THE bacillus-craze has slain another Spanish victim. Dr. Don G. Puerta (*El Siglo Medico*, No. viii. 85, p. 578) has detected bacilli, which look exactly like Koch's cholera-bacilli, in various specimens of tincture of opium. The microbes showed a distinct motion, and appeared especially numerous in the precipitate on the sides and bottom of the vessel.

We do not see anything remarkable in the fact that a vegetable infusion of long standing should show fungi and microbic life; but possibly Dr. Puerta thinks he has discovered the true specific germs of cholera; if so, he will have to fight it out with Koch and Pettenkofer: or can it be that the bacilli are the cause of the *vis dormitiva* of opium?

DR. ROSE'S PAPER ON ANTISEPTICS.

ATTENTION has been called to the fact that Dr. Rose, in his paper published in our November issue entitled "Some Remarks on Antiseptics," etc., speaks of a three per cent. solution when the ingredients evidently make a one and a half per cent. solution. Dr. Rose informs us, in response to our query, that the proportions are correct, but that he fell into the mistake of calling the solution a

three per cent. instead of a one and a half per cent. by following Von Bruns, who, employing the same formula, termed it a three per cent. instead of a one and a half per cent. solution.

Reports on Therapeutic Progress.

TREATMENT OF CHRONIC GONORRHOEA.

The cure of a chronic gonorrhœa is so difficult and rare that the affection is almost regarded as an opprobrium of the profession. There are men who are troubled by the "morning-drop" for years in spite of every known medication. An especial danger of the chronic gonorrhœa is its proneness to resume an acute nature. Family disturbances are not infrequently caused by the presence of this affection in the husband, on account of the indisposition of the latter to fulfil his marital obligations. We agree with Dr. CASPAR, of Berlin, in blaming not so much the lack of efficiency of the usually employed medication as its improper application. Dr. Caspar's essay on the subject, appearing in the *Berliner Klinische Wochen.* of December 7, 1885, contains some instructive suggestions which invite our interest.

Examining the anatomical relations of the parts implicated in gonorrhœa, we find the male urethra to be a tube of fifteen to eighteen ctm. long, which is so materially different in its various portions that it is *a priori* improper to designate the affection of every portion collectively as gonorrhœa. The pars membrana and prostatica ought to be as strictly separated as is the cervix uteri from the fundus. An inflammation of the pars spongiosa need not necessarily affect the pars membrana, and *vice versa*. Most chronic gonorrhœal affections are situated in the bulb, or in the border-lines between the bulb and the pars membrana. Of one hundred callous strictures, about seventy occur in the stated regions, twenty in the fossa navicularis, and ten only on other localities of the pars spongiosa. These are the favorite seats of chronic gonorrhœa, though, of course, we occasionally find a gonorrhœa in the posterior portion of the urethra. Still, these are exceptional cases. We have, hence, to deal with a gonorrhœa which is either an anterior one, an anterior and posterior one, or a posterior one solely.

Most of the ordinarily-employed therapeutic interferences in gonorrhœa are useless. This is especially true of the inevitable injection, which does not go beyond the musculus com-

pressor unless an inordinate pressure is used. When the liquid impinges on this sensitive region the musculus compressor closes the urethra by reflex action, and forbids the entrance of the liquid beyond. The mere manipulation of drawing the hand from the meatus to the musculus compressor upward does not remove the spasm of the urethra, as has been asserted by some authors.

The most important matter is to decide whether the gonorrhœa is an anterior or a posterior one, which can be readily done by noting the behavior of a fluid injected into the urethra by means of a catheter. If the fluid flows out from the sides of the catheter, we know that the point of the catheter rests before the musculus compressor; if the fluid is neither ejected from the sides nor from the mouth of the catheter, we can be assured that the point of the catheter rests in the posterior portion of the urethra. But if the fluid returns directly by the mouth of the catheter, we know that its point rests in the bladder. This recognition is, of course, of the highest practical importance. We draw, hence, the following conclusions: Everything that collects in front of the musculus compressor returns by the urethral orifice; everything that collects in the posterior urethra flows in the bladder, on account of the inferiority of the internal sphincter muscle regarding the musculus compressor. This will suffice to determine the differential diagnosis between an anterior and posterior gonorrhœa. If the lips of the urethral orifice are glued together, or a few drops are noted in front of it, or if the clothing shows pus-spots, we can be reasonably certain that the affection is situated in front of the bulb. If these conditions are absent the correct diagnosis is less easy. Often the patients complain of a certain prickling or burning sensation on a certain circumscribed region of the urethra, which of course is then to be regarded as the seat of the gonorrhœa. At other times we succeed by examining the urethra with the button-sound and marking the sensitive spot. If a frequent desire to urinate should be found to exist, we can conclude that we deal with a posterior gonorrhœa. If alongside of this desire to urinate frequently pus-drops appear on the meatus, or its lips are glued together, or pus-spots are found on the clothing, we probably have an anterior and posterior gonorrhœa combined, although the absence of the stated desire does not justify the assumption that there is no posterior gonorrhœa existing in a given case. In the acute

posterior gonorrhœa we find invariably the desire to urinate frequently, while in the chronic form this symptom is often absent. The endoscope occasions necessarily so much pain that its employment is not advisable.

The following method of arriving at the proper diagnosis is preferable: The patient, after having not urinated for five or six hours, is asked to urinate into two glasses. If the first portion of the urine has a flocculent appearance, while the second remains clear, we have to deal with an anterior gonorrhœa; if, however, both portions are turbid, we have a posterior gonorrhœa. These symptoms, however, have a diagnostic value only in cases with a considerable secretion. In these cases we are, besides, certain to find the drop on the orifice, the gluing together of the lips of the meatus, and the pus spots on the clothing, if the gonorrhœa be an anterior one. Likewise would a considerable secretion in the posterior urethra, by flowing into the bladder and rendering all the urine turbid, make itself distinctly known. If, however, the secretion is so small that it could not reach the meatus nor the bladder respectively, we would have the following results:

1. In both cases we would find no traces of the catarrh on the urethral orifice.
2. In both cases the first portion of the urine would be flocculent, as the secretions are rolled up, as it were, by the first portion of the urine, and driven out of the urethra, no matter in which section of the urethra these secretions are situated.
3. In both cases the second portion of the urine will be clear.

In most cases, however, the mentioned method suffices to arrive at the proper diagnosis.

The difference between a cystitis and a posterior gonorrhœa is easy enough. In both affections both portions of the urine are turbid, but in posterior gonorrhœa the first portion is necessarily more turbid than the second one, while in cystitis just the reverse condition takes place. This latter fact is brought about by the pus settling according to the law of gravitation in the deepest portion of the bladder, and being ejected only by the last portion of the urine.

Basing on these views, Ultzmann constructed his well-known instruments, which are usually employed with great success.

If, however, a stricture has been forming or is about to form, the named instruments will be found to be insufficient.

It is well known that the gonorrhœal inflammation in contradistinction of a urethritis does not limit itself to the mucous membrane of the urethra, but enters the submucous tissues, the corpora cavernosa, and muscles. The product of this inflammation is a cellular infiltration of the affected parts, which leads to cicatricial tissue, and forms a stricture. At the same time epithelial cells are being constantly formed on the mucous membrane, the death and exfoliation of which furnish the material for the secretion of the chronic gonorrhœa. The glands and lacunæ Morgagni, and even Littre's glands, participate in the morbid process. Dittel regards the characteristic gonorrhœal threads and the *goutte militaire* as the product of the catarrh of Littre's glands and of the sinus Morgagni. We thus gain the conviction that even in absence of an actually existing stricture the entire gonorrhœal process must be regarded as the forming stage of a stricture, or, as Otis calls it, a stricture of a wide calibre. At the same time we can now understand that astringent and antigonococcic medicines cannot cure a gonorrhœa.

A radical cure must combine means to eliminate the cellular infiltration and to heal the catarrh. Hence the so-called progressive sound-treatment proved successful in many cases, and Unna's method, to employ bougies invested with a soluble medical coating, initiated a new and thoroughly satisfactory era for the treatment of gonorrhœa. The modification of Unna's bougies, introduced by Dr. Caspar, of Berlin, will be certain to prove a great improvement, and ought to receive a careful trial with us. Caspar constructed a sound of German silver having numerous canals on its body. The sound is slightly conical, and twenty-five cc. long. It usually has about six of the stated canals, which are of a depth of one and a half mm., and flatten off toward their anterior portion, and are wholly absent at a distance of five cc. from the point of entrance. (The instrument is manufactured by W. Tasch, Berlin, Schloss-freiheit.) These sounds are invested with an ointment-mass, which in a melted condition is poured into the canals, where it soon grows solid.

As ointment-mass the following recommends itself :

Cacao, 100 parts;
Cer. flav., 2-5 parts;
Argent. nitr., 1 part;
Bals. Peruv., 2 parts.

A three per cent. resorcine-ointment might

also be used, but it is in no way superior to the above mass. The *modus operandi* is as follows: Two teaspoonfuls of this mass are placed in an evaporating vessel having a mouth, and warmed over a flame slowly and carefully. The vessel ought not to attain a degree of warmth which prevents it from being touched by the hand. After the mass has melted, the canals are filled with it and allowed to solidify. The instrument must be thoroughly round and smooth. The anterior smooth part is to be anointed with vaseline in order to allow of a painless and easy entrance into the urethra. The instrument guarantees that the medicine reaches the exact locality on which it is needed. The sound passes beyond the stricture, and the ointment melts at the temperature of the urethra in course of a few minutes, and can thoroughly medicate the affected portion.

Ten to twenty applications are, according to Caspar's statement, usually sufficient to cure even an obstinate case of chronic gonorrhœa. Thirty of the most rebellious gonorrhœal affections were cured by him permanently, although fourteen of them had lasted over six months, and six over one year.

POISONING BY HOMŒOPATHIC TINCTURE OF BRYONIA.

DR. CRAIG DIXSON reports in the *Australasian Medical Gazette*, October, 1885, that he was called to see a man, aged 63, in a state of collapse, and evidently suffering from the effects of some narcotic irritant. He had vomited freely; the pulse was imperceptible at the wrist; the patient drowsy and livid, and covered with cold perspiration. There was no diarrhœa, nor was there any complaint of pain. The patient was delirious, and yet could be made to give a kind of answer to a question. The history given was as follows:

The patient had been in the habit of dosing himself with homœopathic remedies, and among other drugs had a decoction of caraway-seeds and dandelion, which he called his diuretic mixture. He had also a bottle of smaller size containing pure mother-tincture of bryonia.

He was suffering from an attack of gout on the present occasion, and had asked his son for a dose of the diuretic mixture, and the son, by mistake, gave him a large teaspoonful of bryonia in water,—about $\text{m} \text{ lxxx}$.

The patient thought that it had not the usual taste of the diuretic mixture, and so

asked to see the bottle from which the dose was taken. The correct bottle containing the caraway and dandelion was then handed to him by some other member of the family, and so he thought that he must have taken the right mixture.

About two hours after this he took his usual dose of 5 drops of strychnine solution, which he was in the habit of taking, and almost immediately after he felt an uncomfortable, tickling, warm feeling in his throat, and very quickly commenced to vomit. Between the initial and last dose he had performed some important business, and, in fact, had been conversing as usual with several people on business matters.

Within a few minutes after the vomiting, which succeeded the last dose,—*i.e.*, the strychnine,—he became oblivious of his surroundings, having a feeling just as if a piece of gauze had been gradually drawn over his face. He then shut his eyes and remembered no more except Dr. Dixon's calling him by a wrong name when he came in. Dr. Dixon was at once sent for by his family. He thought at first the patient would die, especially since it was very difficult to get him to take any medicine by the mouth. However, by dint of perseverance, strong stimulants, as ammonia, nitrite of amyl, coffee, etc., with heat to the extremities, the doctor got the patient out of danger in about one hour and a half.

This case is interesting, as poisoning by bryonia is certainly uncommon, and it is regarded as a simple irritant poison.

The usual symptoms are giddiness, intoxication, or delirium, vomiting, colic, purging, and coma.

Experiments on animals have proved that it causes inflammation of the stomach and intestine.

The fresh plant applied to the skin produces vesication.

Woodman and Tidy (1877) only make reference to three recorded cases, two of which appear to be culled from the French, but the dates are not given. The third appeared in the *Lancet*, 9th May, 1868.

Of the two former cases one is recorded to be a male adult, who took an infusion of the root for ague. Symptoms were purging, followed by death.

The second case is a female adult, who took one ounce of decoction—part by mouth, part by injection—to stop the milk. Symptoms are not recorded, but death followed in four hours.

The *Lancet* case occurred in the person of

a child of 3 years (female), who took the berries. Giddiness came on in half an hour, furious delirium during night, vomiting, diarrhoea, dilated pupils, and coma, and death in thirty hours.

PHYSIOLOGICAL ACTION OF SULPHATE OF FUCHSINE AND SAFRANINE.

While everybody knows that, especially the cheaper and still beautifully colored, red wines do not solely owe their purple lustre to the coloring-matter of the grape, few persons are probably aware that highly poisonous materials are occasionally, if not habitually, employed to produce this fraudulent coloration. Slight constitutional and graver gastric symptoms follow so frequently the ingestion of even small quantities of such wines that a close examination of their constituents is well indicated.

CAZENEUVE and LÉPINE communicated to the Academy (meeting of the 16th of November, 1885) their conclusions as to the physiological action of two drugs which are most ordinarily employed for coloring divers wines, viz., the sulphate of fuchsine and safranine. We abstract the most salient points from a report of this communication as appearing in the *Gazette Hebdomadaire* of November 20, 1885.

The experiments refer to observations made both on animals and on man.

The sulphate of fuchsine was found to be in every way exempt from toxic properties.

The experiments made with safranine, which is the product of an oxidation of various substances, chiefly of aniline and pseudo-toluidone, gave the following results:

If a solution of safranine in salt water, in a proportion of 7 to 100, is injected into the veins of a dog, we perceive at once distinctly toxic phenomena. If a dose of $\frac{1}{10}$ gr. to the pound body weight is given to a dog, we note almost immediately after the injection a conspicuous coloration of the mucous membranes, acceleration of the heart, with a shortening of the contractions, considerable dyspnœa, with marked expiration, and usually convulsive movements of the feet. After the expiration of a couple of hours, we observe intense coloration of the urine, often with albuminuria, without any increase, however, in the quantity of the urine. After an abundant diarrhoea, lasting for several days, the animal perishes. If the doses be doubled, the stated symptoms make their appearance much more rapidly and in a more pronounced manner.

It is possible even that death takes place by respiratory failure before the injection is finished. Making an autopsy, we find the following conditions: The heart is very large, and in its diastolic phase; the lungs are healthy, neither congested nor colored; the peritoneum is injected, likewise the gastric and vesicular mucous membranes, which show a much stronger hyperæmic condition, however; the bile is scanty, and has a decidedly reddish appearance. If safranine is ingested in form of a powder by a dog in a dose of 15 to 60 grs. daily for a period of several weeks, diarrhœa is the only noted symptom, as the irritation of the drug on the intestinal tract, and subsequent copious evacuations, prevent the absorption of its active principle.

THE PHYSIOLOGICAL ACTION OF TOBACCO.

In the Fiske Fund Prize Dissertation, No. XXXIV., entitled "The Physiological and Pathological Effects of the Use of Tobacco," recently published by Messrs. P. Blakiston, Son & Co., of Philadelphia, the author, DR. HOBART AMORY HARE, presents the facts and arguments that have led him to the following conclusions:

1. Tobacco-smoking does not decrease the urine eliminated, but rather increases it.
2. Tobacco does retard tissue-waste.
3. Tobacco and its alkaloid cause convulsions in the primary stage of the poisoning, by depressing the reflex inhibitory centres in the cord.
4. It causes the palsy of the second stage, by paralyzing (*a*) the motor nerve-trunks, (*b*) the motor tract of the spinal cord.
5. The sensory nerves are not affected by the drug.
6. Nicotine contracts the pupil, by stimulating the oculo-motor and paralyzing the sympathetic, this action being peripheral.
7. Nicotine primarily lowers the blood-pressure and pulse-rate; (*a*) secondarily increases pressure and rate; (*b*) thirdly, decreases pressure.
8. The primary lowering of pressure and rate is due to pneumogastric stimulation, associated with vaso-motor dilatation.
9. The secondary stage is due to vaso-motor constriction and pneumogastric palsy.
10. The third stage is due to vaso-motor dilatation returning.
11. Death in poisoning from this drug is due to failure of respiration, the action of the drug being centric.
12. The blood-corpuscles are broken up and crenated by the action of the poison.
13. In death from nicotine-poisoning the blood shows changes in *spectra*.
14. Death

can be brought about by the cutaneous absorption of nicotine.

15. Tobacco increases intestinal peristalsis in moderate amounts, and produces tetanoid intestinal spasms in poisonous doses.
16. The liver seems to destroy the poison, although this destruction is participated in by any set of capillaries in other parts of the body.
17. Tobacco-smoking increases the pulse-rate and decreases arterial pressure.

ON THE PHYSIO-PATHOLOGY OF FEVER.

Our space, unfortunately, does not permit us to give more than an epitome of the highly interesting study of PROF. E. MARAGLIANO on the physio-pathology of fever as appearing in the *Centralblatt für Medicinische Wissenschaften* of November 14, 1885.

Maragliano has studied during the last three years the behavior of the vessels of the skin in beginning and in receding fever, with the hydroplethysmograph of Mosso, often eight to ten hours without interruption. A first series of observations was made on patients who, in the course of the experiments, were spontaneously attacked by fever. The main results of these observations were the following:

1. A febrile temperature was found to be preceded by a progressive contraction of the vessels of the skin.
2. During the height of contraction—when the vessels attain their minimum lumen—we find the climax of the febrile temperature.
3. As long as the temperature remains at its highest level the contraction of the vessels persists.

A second series of experiments was instituted on patients in whom the fever set in after a previous reduction of the temperature to normal by antipyrin, kairine, and thalline. In these experiments Maragliano observed the same phenomena as stated above.

In a third series of experiments patients were used in whom the febrile temperature fell to normal during the experiment without the exhibition of antipyretics. The following results were here obtained: 1. The fever attack is preceded by a progressive dilatation of the vessels of the skin. 2. This dilatation increases simultaneously with the sinking of the temperature, and reaches its maximum when apyrexia appears.

These investigations prove the old theory of fever as advanced by Traube. Basing on the results of his calimetric examinations, Maragliano feels certain that in fever we have to deal with a retention of heat, with

concomitant ischæmia of the vessels, and in defervescence, with an increased thermal discharge, with a concomitant vascular dilatation. Still, our author does not by any means believe that the retention of heat is the sole cause for the fever. On the contrary, he is positive that still another factor, viz., increase of heat-formation, plays an important rôle in the causation agencies of fever. The increased production of urea and of carbonic acid gas furnish a satisfactory proof for the existence of this increased heat-formation. As to the true significance of this intensified combustion process, we require a good deal more of detailed knowledge. Possibly it is caused simply by an overheating, as it were, following upon the retention of heat.

Naunyn, Lehmann, and others have recently shown that if animals are subjected to an artificially effected rise of temperature, they give off more urea and carbonic acid. Maragliano has observed the same phenomenon in men if they are subjected to a heightened temperature, such as in consequence of warm baths.

At any rate, there is no doubt that an increase in the heat-production takes place, no matter what causes the latter might have. Therefore we can conclude that the rise of temperature in fever is caused by both a heat-retention and an increased heat-production. This does, of course, not exclude the presence of other still unknown factors.

The experiments and observations made in this connection on various antipyretic drugs are equally interesting.

The first series of experiments were made with kairine, antipyrin, thalline, the salts of quinine, and salicylate of sodium, on individuals who were perfectly afebrile and healthy. The results obtained with Mosso's hydroplethysmograph and Winternitz's calorimeter were as follows:

1. All employed antipyretics cause in apyretic individuals a considerable vascular dilatation.
2. They cause also an increased discharge of animal heat.
3. They produce a fall in the excreted carbonic acid gas.

A second series with these drugs was made on fever patients, and gave the following results:

1. The antipyretic effects of these drugs are caused by a vascular dilatation. When their influence is exhausted, vascular contraction and subsequent rise of temperature ensue.

2. During the period of their activity increased discharge of heat invariably takes place. After their exhaustion the heat-discharge decreases, and the temperature rises again.

3. The influence to antipyretic drugs is intimately connected with a reduction of the oxidizing processes within the economy.

As a general conclusion to Maragliano's valuable researches, we can advance the theory that antipyretic remedies act by being able to eliminate the two most important pathogenetic causes of fever. In other words, they prevent vascular contraction, and the thus resulting storing up of animal heat, and increase the heat-discharge; besides, they combat successfully the increase of heat formation by reducing the intensity of the oxidizing processes of the economy.

This double action of the antipyretic drugs is probably caused by an influence exerted on the innervation of the vascular system and the so-called trophic nerves. Possibly their action affects directly the medullary centres, which, according to the latest researches of Fano, exert a great influence on the nutrition of tissues.

EVISCERATION OF THE EYEBALL BY THE NEW METHOD.

At a meeting of the Baltimore Academy of Medicine, held December 1, 1885, Dr. J. J. CHISOLM (*New York Medical Journal*, December 19, 1885) related a case of evisceration of the eyeball after the plan recently recommended, which consisted in completely excising the cornea by means of a circular incision around its margin, the contents being then entirely removed, leaving the sclerotic intact. The advantage alleged for the operation was that the socket-tissues were not disturbed; neither was the muscular apparatus of the eye interfered with; besides, the stump left made an admirable seat for an artificial eye. The operation itself was very simple, and could be performed much more expeditiously than complete enucleation, but convalescence was so very tedious, and at times gave rise to such painful and alarming symptoms, as had occurred in his case, that in future he should confine himself to the old plan of complete enucleation. It was his usual custom to allow a patient to go about his affairs very soon after the operation, at the outside in twenty-four hours, but in the evisceration operation, even up to the fourth day and later, there were such œdema and pain that he could

not think of allowing the patient to be from under his observation. He had never had such an experience with the old method.

**ON THE INFLUENCE OF TEMPERATURE
ON FILTRATIONS OF ALBUMINOUS
SOLUTIONS THROUGH ANIMAL
MEMBRANES.**

From a very recent inaugural dissertation of A. Löwy (Berlin, 1885) on this subject we have gathered some principal points of interest. W. Schmidt has found that in filtrations through animal membranes (pericardium of calf) the quantity of the filtrate increased with the rise of temperature, while the relative percentage of solid residue-matter decreased. Löwy filtrated under a constant pressure (84.3 ctm. of the filtration-fluid) blood-serum and solutions of egg-albumen through animal membranes (pig-bladders, dried and softened first in water, then in serum) at a varying temperature. The surface of the filtering membranes amounted to 41.9 ctm. A loss of the filtration-fluid by evaporation was sufficiently guarded against. After a definite duration of the experiment, the quantity of the solid residue, its contents in organic and inorganic substances, were repeatedly determined. Löwy gained the conviction by a separate determination of the albumen that the organic substances consisted almost wholly of albuminous matters. He found that with a rising temperature, the quantity of the filtrate, the dry residue and its contents of organic substances rose constantly. The following table will serve to illustrate these facts with reference to the filtration of diluted blood-serum :

Temperature (C.).	Quantity (serum).	Solid residue. Per cent.	Organic Inorganic Matters.	
			Per cent.	Per cent.
16 $\frac{1}{4}$ °	8.8	0.17	0.14	0.039
35 $\frac{1}{2}$ °	15.98	0.33	0.28	0.072

In the majority of cases the relative quantities of the dry residue and of the organic substances are found to equally increase at a heightened temperature; also the inorganic substances appear to filter in larger absolute quantities in a heightened temperature, though a rise of temperature influences them less than the organic substances. The following table is to illustrate these facts :

Temperature (C.).	Quantity (serum).	Solid residue. Per cent.	Organic Inorganic Matters.	
			Per cent.	Per cent.
13°	3.5	8.81	7.9	0.91
30°	9.95	7.61	6.7	0.94

In conclusion, we give the figures which

Löwy obtained with diluted serum (2.3 per cent. solid residue, of it 2.1 per cent. organic matters) under a temperature varying between 37.5° to 42° (C.).

Temperature (C.).	Quantity (serum).	Solid residue. Per cent.	Organic Inorganic Matters.	
			Per cent.	Per cent.
37.5°	6.0	2.32	2.05	0.27
42.5°	6.55	2.28	2.08	0.2

Even if the increase of solid matters, as shown by this table, is not a great one, the fact that a heightened temperature increases the filtration of albuminous solutions must be accepted as a physiological maxim.

TREATMENT OF LUPUS BY COLD.

Few diseases of the skin have within a comparatively brief period experienced so many changes of treatment as lupus. Nearly all of the therapeutic interferences in lupus aim at the destruction of the affected tissue, as is clearly the case with the caustic pencil, first recommended by Hebra, the sharp spoon, and the galvano-cautery. The sanguine anticipations in regard to the local employment of iodine and pyrogallic acid found but an imperfect realization, at least these drugs failed to show any specific antilupous properties.

The noteworthy discovery that the lupous tissues contained tubercle-bacilli has hitherto led to but few and practically little important therapeutic innovations. The fact, however, that the number of bacilli was found to be a very small one in every lupous tissue induced Koch, after a careful study of the subject, to assert that the low temperature of the integument formed a check to the development of the pathogenetic microbes of the affection. Basing upon these certainly very plausible conclusions of that distinguished bacteriologist, PROFESSOR GERHARDT, of Berlin, treated four cases of lupus that came under his observation by the application of ice, and communicated his clinical results to the *Deutsche Medicinische Wochenschrift* of November, 1885.

To avoid pressure, an ice-bag was suspended from a scaffold and lowered upon the affected part twice daily for three consecutive hours. It is to be added that the four cases under treatment had previously been subjected to every known mode of medication without experiencing any material improvement.

Gerhardt's ice-treatment, which was in every instance kept up for about a month, produced not only better results than were obtained by

all preceding therapeutic measures, but led to what could with propriety be called a temporary cure.

These experiments having been carried on very recently, Gerhardt is, of course, not yet able to tell whether or not relapses will occur.

At any rate, it is rational to assume that, provided we accept the tubercular and parasitic nature of lupus, the lowering of the temperature forms a powerful check to the growth of the microbes, and that cold is consequently an energetic therapeutic agent in lupus.

THE TREATMENT OF HYDROCELE AND VARICOSE VEINS BY CARBOLIC ACID INJECTIONS.

DR. LEONARD WEBER reports in the *Medical Record*, December 12, 1885, four cases of hydrocele which had been rapidly and painlessly cured by the injection of three ounces of a mixture of equal parts of carbolic acid, alcohol, and water. Of course this method of treatment will not answer in hydrocele where the sac is hypertrophied to any considerable extent. In such cases a radical operation and antiseptic dressings form the safest and best mode of treatment. Dr. Weber also states that carbolic acid has proved a safe and efficient remedy in his hands for the purpose of coagulating the blood in varicose veins, and obliterating them by adhesive inflammation; and he reports a case of severe varicose veins cured by the injection of four drops of carbolic acid into each sinus, entering the needle sidewise, and making a compression on the approximal and distal end of the sinus until a soft coagulum had formed. In treating hemorrhoids, the external hemorrhoids of small size may be obliterated by injecting a minim or two of carbolic acid, or, with a less risk of sloughing, four or five minims of a fifty per cent. solution of the acid.

A careful selection of cases of hemorrhoids suitable for the obliterating treatment by carbolic acid injections is highly commendable. With small, tense, and moderately bulging tumors of this kind good success will be rare, while the procedure is often painful, and not infrequently followed by inflammation. In a few cases, where this plan was employed by Dr. Weber, gangrene of the injected hemorrhoid supervened, and the dead mass came away under antiseptic dressings without any unpleasant local or general consequences.

Phlegmon, abscess, and subsequent fistula in ano, in consequence of injections either too strong or applied in cases in which this mode

of treatment was not advisable, have been seen. The possibility of ascending thrombosis and pyæmia under similar circumstances cannot be denied. Altogether, the cure of hemorrhoids by carbolic acid injections is a method neither as generally applicable nor so free from danger as it has been represented by some practitioners.

In operating it will be best to insert the needle about one-fourth of an inch from the base of the tumor, and push it through the sound skin directly forward into its central portion, taking good care not to spill any of the liquid along the track of the needle or at the point of entrance. This precaution is essential if we want to get obliteration of the pile by adhesive inflammation instead of seeing it slough away. The large and pendulous external hemorrhoids may be ligatured after incising their cutaneous parts, cut off, and the wound dressed with iodoform until the ligature comes away.

Whether we employ the ligature or thermocautery in external or internal hemorrhoids, it is good practice to stretch the sphincter ani in a moderate degree before proceeding to operate. Such distention not only facilitates the operation, but also prevents subsequent pain and discomfort, and promotes the healing of the wound.

Carbolic acid injections will not do for internal piles. They must be treated by the ligature, or the clamp and cautery, as described above.

Dr. Weber states that he has the records of four severe cases of external and internal hemorrhoids, three in males and one in a female, every one of which had between five and eight hemorrhoidal tumors within and without the sphincters. They all showed the symptoms of anæmia to a considerable degree. Three of them were operated upon with the clamp and cautery, one with the ligature, and they all got well without secondary hemorrhage or other unpleasant symptoms.

SULPHATE OF SPARTEINE.

M. GERMAIN SÉE, the eminent Parisian therapist, presented at a recent meeting of the Academy the results of his researches on the sulphate of sparteine, which served to arouse the highest interest in all present. Before discussing the remarkable statement of Sée it will be well to give an exact representation of his main conclusions regarding the drug, as published in the *Gaz. Hebdomadaire* of November 27, 1885.

Sulphate of sparteine is a cardiac regulator and a dynamic medicine of high power. The following are its most characteristic physiological effects as far as the circulatory system is concerned :

1. Its most salient action is to raise the power of both heart and pulse ; in this respect, however, it acts in a more pronounced manner, more promptly, and more constantly than either digitalis or convallamarine.

2. It regulates immediately a disturbed cardiac rhythm, and incomparably better than any other known drug.

3. It accelerates the beats of the heart in grave atonic conditions of both the heart and the general organism, and approaches in this respect belladonna.

All of these phenomena appear at the end of one or several hours, and persist three to four days after discontinuation of the medicine. During this period the vital energy of the entire system is raised and the respiratory act facilitated, though not so greatly as after the exhibition of iodide of potassium.

The urinary functions alone seem to remain unaffected, in the moderate doses at least in which Sée has hitherto employed the drug.

As to the indications of sulphate of sparteine, we can gain from the above statement a very clear and precise view. The drug suggests itself in the first place in myocardiac weakness, no matter whether resulting from direct tissue-changes or from an insufficiency subsequent to compensatory efforts on circulatory impediments. If the pulse has become irregular, intermittent, and arrhythmic in the course of various cardiac or general affections, sulphate of sparteine should invariably and rapidly restore the normal condition by sustaining and augmenting the power of the heart.

So far, so good. It sounds well enough, and may even be precisely as stated by Sée. But we fail to note two very essential factors in the report : first, there is not the slightest mention made of any possible untoward after-effects, especially of an accumulative action, so dreaded in the case of digitalis, and then Sée's report lacks the indispensable basis of clinical trials and proofs, which we are very anxious to obtain.

BACTERIOTHERAPY.

In a recent number of the GAZETTE we gave a short account of Professor Cantani's experiment in "bacteriotherapy," in which a phthisical patient was subjected to inhalations

of bacterium termo. The result was that bacillus tuberculosis disappeared, and the condition of the patient was wonderfully improved. DR. SALAMA, of Pisa, according to the *British Medical Journal*, November 28, 1885, reports another case of the same kind. In a case of phthisis, with a cavity in the apex of the left lung and various patches of consolidation, Koch's bacillus disappeared within about a fortnight after the inhalations of the bacterium termo were commenced, all the other symptoms improving at the same time. Dr. Maffucci, Professor of Pathological Anatomy at Pisa, who verified the diagnosis, prepared the bacterium-culture. A few drops of spring-water were added to a sterilized solution of gelatin in meat-broth with peptone. After a day or two colonies of various micro-organisms made their appearance, and among them was the bacterium termo. Under the microscope, a sterilized platinum needle was dipped into this, and then introduced into another portion of the gelatin preparation. After two days this was found to be a pure culture of the bacterium termo. The contents of one test-tube prepared in this way served for one day's inhalations, being mixed with a meat-broth made from 150 grammes of beef to 200 grammes of water, and left for eight or ten hours, according to temperature. If left too long, the putrefaction became insupportable to the patient. Broth so prepared was given by Siegel's spray-producer every day in divided doses. Sufficient time has not yet elapsed to show whether the improvement was permanent. It is not quite certain that the bacterium was the sole agent of amelioration here. It is possible that the meat-broth may not have been without its effect ; and it is just within the range of supposition that the bacterium has a psychical influence on physician as well as on patient, not less important than its alleged bacillicide properties.

INJECTIONS OF CALOMEL IN SYPHILIS.

DR. NEISSER, professor at the University of Breslau, recommends in the *Deutsche Medizinische Zeitung* of November 30 his method of employing calomel hypodermically. He uses the following formula :

R Hydr. chlor. mit.,
Sod. chlor., aa 5 parts ;
Aque dest., 50 parts.

And injects a syringeful twice every two

weeks, or once every week, into the gluteal region, penetrating deeply into the tissues. Neisser claims that on account of the long-lasting and yet but very slowly-proceeding absorption of the mercury, this method is alongside of the inunction-cure to be regarded as the most efficacious and energetic treatment of syphilis. He has treated one hundred and twenty-two cases (fifty-four males and sixty-eight females) with these calomel injections, and feels quite gratified at the results. In rebellious and relapsing cases this method gave especially favorable results. The objections that can be urged against these calomel injections are that they occasion a good deal of pain, and not rarely produce infiltrations and abscesses, which untoward effects, however, can all be avoided by an ample ingestion of chloride of sodium, either as *an addition to the food or taken alone*.

The nozzles of the hypodermic syringes used in Germany are about one-third longer than those used in America, and are buried in the tissues in their full length. It is claimed that the danger of forming an abscess is lessened by entering the lowest strata of the connective tissue, or even the muscles themselves. The method as practised in America, however, gives such satisfactory results that there is no occasion to deviate from it.

ON THE DURATION OF THE ACTION OF MEDICINES.

At the last annual meeting of the British Medical Association, DR. D. J. LEECH opened the discussion in the Section of Pharmacology and Therapeutics on the duration of the action of medicines with a very valuable paper, containing many points which cannot fail to interest our readers, and we therefore publish a tolerably full abstract of his address.

In the treatment of disease by medicines we have to determine the frequency with which a drug must be given, as well as the quantity in which it should be administered. Experience doubtless aids us in deciding as to the periods which should intervene between successive doses of medicines; but in a large majority of cases the frequency of repetition is, to a great extent, a matter of routine. The custom of administering medicines at regular intervals of three or four hours—a little oftener when the case is severe, at longer intervals as it becomes milder—has come down to us from a time when the knowledge, both of disease and of drugs, was less advanced than it is now. Disease was formerly looked upon

as an enemy to be attacked and routed by medicine; if the enemy were in strong force, it was considered desirable that a strong fire should be maintained at short intervals. If he showed signs of retiring, the fire was slackened in its severity, in its frequency, or in both. The exact manner in which medicines effected the cure of disease was either not considered at all, or was the subject of vague speculation. But, at the present time, one of the leading objects of the therapist is to alter the functions of certain tissues or organs temporarily or permanently. Sometimes we aim at restoring the normal functions of parts, sometimes we desire to modify functions for a time, and thus neutralize evils arising from a disordered condition of other parts on which we cannot act. But whether our purpose be to restore or modify, we know it can rarely be attained except by acting on the tissues or organs we wish to influence, with a certain degree of continuity; and we should endeavor, therefore, to repeat our medicines in such doses, and at such intervals, that the continuity of action we desire may be attained.

If this be so, it is manifest that our knowledge of the length of time during which a medicine can be counted on to act on any organ ought to play an important part in our decision as to its repetition. Unfortunately, our information as to the duration of action of some drugs is very limited, and the causes which lead to variations in duration are only obscurely known to us.

Now, first of all, the question may be raised, Does our present knowledge support the view that medicines act during definite periods; that is, can we rely on a given dose of a drug influencing the organ in which it acts for the same space of time in different individuals, or on the same individual at different times?

It must be confessed that some of our experiences seem at first sight to give a negative answer. We know that if a number of persons take a poison together, the effects may commence and terminate at different times. A dose of arsenic may cause violent symptoms in ten minutes, but ten hours may elapse before evidences of poisoning appear, and the period at which death occurs may vary in a corresponding manner.

Differences with regard to the effects of poisons can be, to a great extent, explained by differences in the rapidity with which the absorption commences. As long as a poison remains quite unabsorbed in the stomach, it cannot, of course, exert its usual effects on other organs; and toxic substances seem at

times to influence the stomach in such a manner that absorption is materially delayed.

Drugs in medicinal doses are less liable to raise up barriers to their own absorption, but a very slight alteration in the condition of the stomach may delay the solution of the materials which, ordinarily, are quickly digested; and there can be little doubt that drugs, even in medicinal doses, may at times remain long unchanged after they are swallowed. Sometimes they are then rejected. Most of us have seen cases in which a dose of medicine has been returned after a sojourn of an hour or two in the stomach. But sometimes absorption at length takes place, and then the ordinary physiological effects appear, though at a late period. Deferred absorption, probably, accounts for most of those instances in which the action of medicines is unduly delayed.

When the absorption of a drug commences without any unusual delay, the duration of its action will depend chiefly on the time required for the completion of this process and on the rapidity with which excretion of the drug takes place. It will likewise be influenced by the susceptibility of the part affected, for we may well suppose that the more powerfully an organ is acted upon, the longer will the disturbance in its functions continue, even though the cause of the disturbance has passed away. Now, susceptibility of an organ to the influence of a drug may vary considerably in different people, and likewise in the same individual, according to the state of health and other circumstances.

Manifestly, the conditions which regulate the duration of the actions of medicines are exceedingly complex. Apart from exceptional circumstances connected with absorption, however, Dr. Leech shows that many medicines do act for tolerably definite periods; and, in some cases, it may be possible to determine the average time of action of individual doses with sufficient exactness to serve as a guide to repetition.

In the first place, it may be pointed out that experience has already made us aware of relative uniformity in the period of activity of many drugs. Ammonia acts quickly on the heart, and its effects soon pass away; the tonic effects of digitalis are slow to appear, but they last a long time. Of our diuretics, purgatives, and emetics, some act for a shorter, some for a longer, period. The diuretic effects of caffeine, for example, soon cease when we stop the administration of this drug, while the increased flow of urine which is produced by

digitalis usually goes on for a long time, sometimes for several days, after the medicine has been discontinued. The difference in the period during which these two drugs act may of course depend on the fact that they exert their influence on different tissues. Caffeine, it has been suggested, stimulates the tubular epithelium, while digitalis causes diuresis through its effects on the vascular system. But the relative difference in the duration of action must certainly be dependent on the fact that each influences the tissues it affects for a more or less definite period. We find, too, that when drugs act in a similar manner on the same tissues, the relative periods of their activity may vary distinctly.

The symptoms of intoxication produced by alcohol can be reproduced by ether, and there can be little doubt that, in inducing their usual results, these two drugs affect the same tissues and functions. But each stage of intoxication is shorter, when caused by ether, than when it is due to alcohol, and, as the relative difference of activity is always to be observed, it is manifest that the duration of the influence of these two drugs, on the parts of the body they affect, must be, within certain limits, definite. What these limits are has not yet been ascertained; but in the case of a class of drugs which yield symptoms capable of graphic representation, the limits of duration may be, to a certain extent, demonstrated.

The marked phenomena produced by the inhalation of nitrite of amyl, and the resemblance between them and those which follow the administration of other nitrites and nitro-glycerin, have been made known to us by the investigations of Drs. Brunton and Cash, Dr. Murrell, Dr. Hay, and others; but all who have made observations on the comparative effects of these substances have noted the great difference there is between the duration of the influence of the amyl compound and that of the other nitrites and nitro-glycerin. Dr. Murrell has pointed out that, while the influence of amyl nitrite is very transitory,—a tracing taken a minute and a half after the inhalation of the drug appearing normal,—the full action of nitro-glycerin is not observed in the sphygmographic tracing till six or seven minutes after the dose has been swallowed, and the tracing does not assume its normal condition for half an hour. Dr. Hay has further drawn attention to the fact that nitrite of sodium checks anginal pains for a longer time than nitro-glycerin, from which it follows that the influence of the alka-

line nitrite on arterial tension persists longer than that of the glycerin compound.

But it has been noticed, too, that the phenomena produced by the nitrites and nitro-glycerin vary not a little in different individuals.

Some people, for example, are powerfully affected by half a drop of the one per cent. solution of nitro-glycerin, while many can take five drops, or often a larger quantity, without feeling any sense of discomfort. Dr. Leech therefore determined the period during which nitro-glycerin and the nitrites depressed the circulation, and has administered these drugs in various doses to individuals differing considerably in susceptibility to their effects, the subject in all cases being free from cardiac disease. He found that the influence of amyl nitrite on the pulse commenced immediately after its inhalation; the arterial tension is reduced to its lowest point in from thirty to sixty seconds, and the blood-pressure then rises again, and usually attains its ordinary height in a minute and a half, though at times the normal tension is not reached for two to four minutes, and sometimes a fall of tension follows in a few minutes after an apparent recovery. This is succeeded by a subsequent rise and improvement, and a third or slight fall, so that the effects of the nitrite may be traceable by the sphygmograph for twenty minutes to half an hour. The duration, then, of the effects of the nitrite of amyl varies considerably. Its very marked tension-reducing influence never lasts more than one and a half to two minutes, but a slight depression of blood-pressure is commonly present for a longer period, and not only does the duration of the influence of the amyl nitrite differ in different people, but it is also variable in the same individual at different times. Of two successive doses, the influence of one may be traced for half an hour, whilst the effects of the other may disappear in the course of a few minutes; but this remark only refers to the slighter effects, very distinct lowering is of the same duration in all.

The nitrite of ethyl depresses tension for a much longer time than amyl nitrite, and in a different manner, since seven or eight minims of pure ethyl nitrite will usually keep the tension distinctly depressed for at least forty-five minutes, in some people for rather more than an hour; and the circulation is often influenced during the whole of the second hour after administration. The depression of the tension, though more prolonged, is not so great as that produced by nitrite of amyl.

Nitro-glycerin acts more quickly and more powerfully than nitrite of ethyl; its effects, too, are more prolonged. A single drop of a one per cent. solution usually causes a fall in the pulse-tension in one and a half to two minutes, and in three or four minutes the fall is well marked. The blood-pressure continues low for about ten minutes, sometimes a little longer; then it gradually rises, and in half an hour may be almost normal. But, after this, oscillations commonly take place, and the normal standard is not usually perfectly attained for an hour to an hour and a half after the drug has been given.

The duration of the effects of the alkaline nitrites is more prolonged than that produced by the nitro-glycerin, but they are not so rapidly produced. In most cases ten minutes elapse before the tension falls markedly, but a slight change is seen within the first five minutes. The size of the dose exercises only a slight influence on the time of commencement, but those who are very susceptible to the action of nitrites are affected in six minutes as strongly as ordinary people are in ten. After the first ten minutes the pressure falls rapidly, and it remains usually very low from the end of the first half-hour until about two hours have elapsed from the time of administration. These experiments seem to show that nitrite of amyl acts powerfully almost at once, and for two minutes, but its influence on the pulse may often be traced for ten to twenty minutes, sometimes longer. The effects of nitrite of ethyl are seen but five to twenty minutes after its administration, but remain very visible for an hour, and are perceptible for one and a half to two hours. Nitro-glycerin powerfully affects the circulation in two minutes; its influence is most marked for thirty to forty-five minutes, and may be detected for two and a half to three hours. The alkaline nitrites produce but little influence on pressure for from six to ten minutes, but then depress it strongly for two and a half hours, and act altogether for between four and five hours. Cobalt yellow begins to act markedly in from twenty to thirty minutes; its tension-depressing effects are often very pronounced for more than three hours, and sometimes visible for six hours.

The times named are, of course, averages. As Dr. Leech has pointed out, the period during which drugs act on individuals is influenced by the natural susceptibilities of the organs affected, by the dose, and by the condition of the absorptive and excretive powers. It therefore follows that the duration of action

must differ within certain limits, not only in different individuals, but also in the same individual at different times.

The state of the organs connected with absorption and excretion is hardly ever the same for any length of time, and so it comes to pass that even consecutive doses in the same individual often vary, to some extent, in the period of their action. If, however, we can arrive at some idea of the average time during which we can count on single doses of our medicines acting, and the limits of variation in duration under different conditions, we shall have gained much.

Susceptibility can usually be determined by experiment, and sometimes judged of in other ways. In the case of the nitrites, for example, a single administration, if carefully watched, may enable us to decide as to whether the subject is easily affected or the reverse; but we may form an opinion on this point from the general characters of the circulatory system. The anæmic, and those of weak circulation, are usually powerfully affected by tension-depressants; those who have a high arterial tension are not so readily influenced.

The benefit derived from these researches is well seen in the case of the nitrites, since through them we have now the power for depressing arterial tension for any time we like. We may influence it for a few seconds; we may keep it low for hours; and when we consider the advantages which accrue in certain conditions from lowered tension, it is manifest that we have acquired almost a new therapeutic power.

ACTION OF MERCURY ON THE BLOOD IN SECONDARY SYPHILIS AND IN ANÆMIA.

The introduction of the hematimetric method into the experimental researches of therapeutics insures a precision and exactness of investigation unattainable by the older observers. The influence of the salts of mercury on the circulation—this old and highly important topic—has been recently the subject of a most thorough and strictly scientific clinical study by DR. L. GAILLARD (*vide Archiv. Générale de Médecine*, November, 1885). The subjects on whom the first series of observations was instituted comprised,—

1. Syphilitic patients without or with a slight anæmia.
2. Syphilitic individual with an advanced state of anæmia.
3. Syphilitic individual also with an ad-

vanced state of anæmia, but in a condition of mercurialization.

Gaillard's conclusions are as follows:

In the first group a diminution of the number of blood-globules and of the hæmoglobin could be observed in the course and at the end of the mercurial treatment.

In the second group a favorable result could rapidly be noted, both the number of blood-globules and the hæmoglobin increasing considerably and in a short time.

The subject of the third observation was not improved. The anæmia had no tendency to disappear, even after the effects of mercurialization had passed away. There was an evident intolerance of the drug, which must be borne in mind both regarding prognosis and the estimation of the therapeutic result.

Comparing these results, we see that the second category, representing syphilis and anæmia, profits most from the tonic and reparative action of mercury. It is hence in these patients that we can look upon mercury as a restoring and augmenting agent of both blood-globules and hæmoglobin. This refers only to the red blood-corpuscles; the white ones were nevertheless counted by Gaillard in each instance. Their number appears to diminish under the influence of mercury, as has also been held as early as 1874 by Wilbouchewitz. [Still it appears hazardous to make any definite statement in this respect. We all know the instability and variance locally and numerically of the white blood-corpuscles. Remembering their abundance in persons affected with even slight suppurations, we would not be surprised to see them decreasing in a woman suffering with vaginitis after the cure of the local trouble.]

The second series of observations refers to the action of mercury on the blood in anæmia. The patient took ordinary doses of either the protoiodide of mercury or of the sublimate. The obtained results are comprised in the following theses:

1. The number of red blood-globules can decrease in anæmic persons under a mercurial treatment in the beginning without re-attaining the original numerical status. More frequently, however, they increase in number progressively up to the fourteenth day, when a slight reduction takes place again.
2. The hæmoglobin increases daily and progressively up to the twenty-fourth day; then it is reduced toward its original figure, but surpassing it still, if the treatment lasts for several weeks.
3. The hæmoglobin increases more con-

siderably in proportion than the red blood-corpuscles. It increases even when the latter diminish in number, so that mercury can be placed alongside of those metals which elaborate hæmoglobin.

4. The bodily weight increases nearly constantly under a mercurial treatment. Still, we are unable to establish an exact relation between this phenomenon and the condition of the blood.

THE ELEMENTS OF PROGNOSIS IN BRIGHT'S DISEASE.

At a meeting of the New York Medical Association, held November 16, 1885, DR. AUSTIN FLINT read a paper with this title (*New York Medical Journal*, December 5, 1885). In the popular mind the name Bright's disease at the present time had a prophetic import not unlike that of a verdict of conviction after a trial for life. It was regarded as a hopelessly fatal malady. This prevailing impression reflected the views of the medical profession that a fatal termination would invariably take place sooner or later. This view accorded with our pathological knowledge and clinical experience. But the scope of prognosis was not limited to recovery from the disease. A disease might involve more or less irremediable damage to important organs; but after having progressed to a certain extent the damage might not become greater, and the remaining healthy portion of the organs might be sufficient for all purposes of life and a perfect state of health. Again, a disease might be progressive, but so slow as not to be opposed to long life and general good health. But in chronic disease the danger to health might depend upon associated affections, or chronic disease might be tolerated, provided the conditions were favorable; otherwise it would prove fatal. Was the disease acute or chronic? Assuming the existence of acute Bright's disease, experience taught that, exclusive of the important concomitant affections, it did not end fatally as a rule, and did not result in any permanent renal lesion. In other words, the acute was not followed by the chronic disease, but exceptionally it ended fatally or in the chronic form. In some cases the acute disease was not marked; it continued for some time, and ended in recovery. Here he would substitute for the word acute, subacute. In some cases the question would arise whether the disease was subacute or chronic, and the diagnosis could only be definitely settled in favor of the subacute form by the disappearance of

every evidence of renal disease after some weeks, and the recovery of health.

The author then considered some of the elements of prognosis in cases of chronic Bright's disease. What were some of the conditions requisite for latency? 1. The kidneys must not be damaged beyond a certain degree. 2. The important organs of the body, other than the kidneys, must be capable of performing their respective functions satisfactorily. 3. The laws of health relating to alimentation, exercise, etc., must be observed. Suppose these conditions to be fulfilled, and a lesion of the kidneys to exist which diminished their functional ability one-half, and the disease was not progressive, life and health would be compatible with the existence of chronic Bright's disease for an indefinite period. In order that chronic Bright's disease should be well tolerated, the treatment should relate to accessory conditions required for bringing about toleration, those conditions relating to other organs of the body and to general hygiene. The kidneys in this condition were incapable of meeting an additional demand on their functions. Should the patient fail to observe the accessory conditions mentioned, the inefficiency of the kidneys would become manifest in headache, misty vision, nausea in the morning, impairment of the appetite, and general debility. Examine the urine in such a case, and evidence would be found of chronic Bright's disease which had probably existed for years, the progress of the renal affection at length rendering the organs incapable of performing their functions properly, which caused attention to be directed to the state of the kidneys. It was important, in determining whether the kidneys eliminated excrementitious matters sufficiently not to endanger the health, to make a thorough examination of the urine, not alone with regard to the presence of albumen and casts, but also as to the amount of urine eliminated daily, its specific gravity, and the proportion of the salts. The quantity of the urine might be increased while the specific gravity was so low as to involve great danger from uræmic toxæmia. Suppose the examination of the urine in a case of chronic Bright's disease showed renal adequacy, how should that fact influence the treatment? In this way,—that diuretics, sudorifics, and hydragogue cathartics would not be indicated; indeed, inasmuch as their influence was debilitating and opposed to the accessory conditions for health just mentioned, they were contraindicated. Was the degree of renal

adequacy, as determined by an examination of the urine, reliable in judging of the absence of danger from toxæmia? This question was to be answered in the negative. In some cases of Bright's disease the quantity of the urine was decreased for a long period without serious consequences. The explanation lay in the fact that the excrementitious matter was eliminated vicariously, or its effects upon the system were counteracted by other agents. On the other hand, slight inadequacy, without vicarious elimination and counteracting agents, sometimes led to serious consequences. The prognosis after coma was always grave, yet we meet with cases repeatedly in which life was preserved for a long time. Of acute pulmonary oedema the same might be said as of uræmic coma. In his experience the most serious consequence of Bright's disease was dyspnoea, or renal asthma, apparently due to toxic effects upon the respiratory centre. He had never known such a case to end in recovery, but he had known life to be prolonged for several years after dyspnoea from pulmonary oedema occurring in the course of chronic Bright's disease.

Recapitulating, Dr. Flint said that subacute diffuse nephritis, having the same seat and characters as acute Bright's disease, exclusive of acuteness, occurred not only after scarlet fever and other fevers, but irrespective of these; and when it occurred as a primary affection, or in connection with other diseases, it was liable to be overlooked, or, if recognized, to be mistaken for the chronic form. Further, acute or subacute diffuse nephritis not infrequently occurred as an intercurrent affection in the course of chronic Bright's disease, and rendered the prognosis temporarily more serious. The disappearance of symptoms and the presence of health did not necessarily indicate that the chronic disease was not still in existence. Again, a susceptibility to the causes of inflammation of the uriniferous tubules, irrespective of the existence of chronic Bright's disease, was to be recognized as an individual peculiarity.

ON MERCURIAL SOAP.

DR. SCHUSTER, of Aix-la-Chapelle, has prepared some neutral soft mercurial soaps, which we believe to have material advantages over the mercurial ointments. We give the formulas as published in the *Deutsche Medicinal Zeitung* of November 30, 1885.

200 parts of lard are saponified with 100 parts of liq. pot. (caustic), and mixed with 50 parts

of water. 200 grm. of mercury are then rubbed up in the most careful manner with 100 grm. of lard, with the addition of some chloroform, which favors the fine distribution of the metal. We then add from the above soap 300 grm. very gradually, so that the preparation receives the consistency of unguentum hydrarg., and under the magnifying-glass shows no globules of mercury.

Another soap is prepared by taking 1 part each of mercury, lard, and potash-soap, and adding at a moderate heat liq. pot. q. s. until complete saponification results.

The soap is to be placed on the part without any addition of water; then the fingers are to be dipped into water, and the soap rubbed all over the intended region. The great advantages of these soaps over the mercurial salves are that they can be rubbed into the part quicker (in ten to fifteen minutes), do not soil the clothing so much, and very rarely, if ever, produce a mercurial eczema. Besides, a far less quantity of the soap than of the ointment is needed to obtain the same effect, while the absorption of the mercury is claimed to be very prompt and easy. At any rate, the mercurial soaps deserve a trial.

POISONING BY CAMPHOR.

MR. J. P. RYAN reports in the *Australian Med. Journal*, October 15, 1885, a case of a young woman who was brought to his house in the afternoon of September 15, her face dusky suffused and perspiring, and breathing slow and shallow, with a tendency to sighing, and her pulse rapid, small, and compressible. Her breath smelt of camphor. She was in a semi-unconscious state, with eyes partly closed, and if placed in the sitting posture her head and body inclined to fall forward and to the side, but if roused and spoken to loudly she made an attempt to sit upright, lifted her eyelids for a moment, smiled in a lackadaisical sort of way, and responded rationally, but in the uniform halting accents of a person laboring under the influence of drink. She was above the middle height, strongly built; and her sister, who accompanied her, stated that she was unusually robust and healthy. They had lunched together at one o'clock on coffee and bread and butter, and afterwards were doing some shopping. She had a slight cold, for which she had been recommended camphor. She had provided herself with a piece as big as an almond, which she began to chew up and swallow in minute portions. Some twenty minutes afterwards she suddenly com-

plained to her sister of feeling giddy and queer, and they had barely time to get into a shop which they were passing when she fell down into a quasi-fainting fit.

Resort was had to the usual restoratives,—fanning, cold water, smelling-salts, etc.,—and after a little she rallied somewhat, but began to talk excitedly, and endeavored to sing or hum snatches of tunes, paying but little heed to the conversation and efforts of those around her. Her face was flushed, the expression peculiar, and her sister said that but for the fact she knew that she never drank any wine or spirits, and that they had been together all the forenoon, she would have come to the conclusion that she was under the influence of drink. As the hilarious excitability was gradually passing into a state of stupor, the sister became alarmed, and had her conveyed to Mr. Ryan's house.

She began eating the camphor at two o'clock. Twenty minutes or so afterwards she had a quasi-fainting attack, followed by hilarity, excitability, with rapidly-ensuing stupor; and when Mr. Ryan saw her, about three o'clock, she was nearly unconscious and in a semi-collapsed state. As her condition was somewhat alarming, no time was lost in giving her an emetic dose, gr. xx of zinc sulphate, which was followed by free vomiting. The vomited matter smelt strongly of camphor, but no pieces of the drug were found in it. After waiting for fifteen minutes, Mr. Ryan gave her 30 π of aromatic spirits of ammonia in a small cup of strong black coffee. Her breathing and circulation improved; her face, from being flushed and dusky, had become somewhat pale, the expression being more natural, and she gradually sank into a light slumber. Half an hour afterwards another dose of coffee and ammonia was administered, and by four o'clock she was sufficiently recovered to be removed to her own home. She was somewhat light-headed and giddy, but only complained of a burning pain at the pit of the stomach, which had disappeared by the next day.

The above case is of some interest on account of the severe if not alarming symptoms produced by an apparently small dose of camphor. In most of the text-books on materia medica the ordinary dose is stated to be from gr. i to gr. x, though Wood goes up to gr. xv (*Treatise on Therapeutics*). He affirms that no death in the adult has occurred from the employment of the drug, though he allows that serious symptoms have resulted from poisonous doses, viz., 30 to 60 grs.; and

Sidney Ringer, in his "*Handbook of Therapeutics*," recommends as much as 20 grs. every two or three hours in the delirium of adynamic fevers.

In the case above reported scarcely more than the latter quantity could have been taken; for her sister, a most intelligent woman, assured Mr. Ryan that the piece was no larger than an ordinary almond, such a quantity weighing about 20 grs. If the solubility of camphor in water is borne in mind, it may be fairly assumed that a considerable proportion of this was expelled from the stomach in the vomited matters. Now it follows, if this be granted, that dangerous symptoms of poisoning were produced in a healthy adult woman by a quantity not exceeding the ordinary doses of camphor as given in the principal text-books of materia medica. [It will be noticed that in this case the size of the dose is simply an inference from the statement of the patient, and is therefore open to cavil.—Ed. T. G.]

FOOD FOR INFANTS AND BREAD FOR DIABETICS.

DR. H. BOEHNKE-REICH describes in the *American Journal of Pharmacy*, December, 1885, a nutritive biscuit and bread which are recommended for infants and diabetics. The nutritive biscuit is intended for infants after they have reached the age of about four months, but is also quite agreeable to adults, and is particularly strengthening to nursing mothers. It is prepared from the best wheat flour, which is mixed with sugar, malt-yeast, table salt, condensed milk, and nutritive salts in such proportions that the finished product has the composition given below. The nutritive salts, according to an assay by B. Kohlmann, made for the Pharmaceutical District Society of Leipzig, contain in 100 parts 6.66 phosphorus, 65.50 oxygen, 5.17 hydrogen, 3.00 carbon, 10.00 calcium, and 9.67 sodium. The dough, properly made, is set aside in a warm place for about an hour and a half, is then placed in suitable moulds, and when sufficiently porous is baked at a dry heat of 200° C. After removal from the oven the cake is exposed to the air for twenty-four hours, and is afterwards slowly roasted at a temperature of 100° C.

The analysis by B. Kohlmann showed a composition in 100 parts of biscuit of moisture 9.76, aliments of respiration 74.94 (including sugar 5.86), plastic aliments (albumen, etc.) 8.56, fat 2.58, inorganic constituents 4.16 (including calcium phosphate 2.25).

Properly preserved, the biscuit remains good for a long time. It has been used by Dr. Furst, of Leipzig, Prof. Deme, of Bern, and many other physicians with good success. The average weight of this nutritive biscuit is not given; but it is stated that two biscuits a day are sufficient for an infant between three and six months old, and four or five biscuits for a child a year old. The biscuit is softened in good warm cow's milk, which, if necessary, is suitably diluted with water, or it may be taken with tea, chocolate, or beef-tea. Dr. Furst states that babies over six months old usually like this biscuit well, digest it properly, and are not subject to glandular swellings, as is often the case if fed on ordinary pastry or farinaceous food.

The bread for diabetics is prepared from pure fresh gluten, with the smallest possible quantity of amylaceous additions. Its odor and taste are pleasant, neither insipid nor sickly, and it may be taken by the patients for a long time without becoming repulsive. Kept in an upright position, it remains palatable for more than three weeks. Kohlmann found its composition to be as follows: Moisture, 22.03; protein compounds, 20.56; fat, 21.78; carbohydrates, 24.28; cellulose, 6.95; mineral constituents (including table salt), 4.40. A similar bread, made by P. Ossian, of Paris, contains a larger percentage of carbohydrates (29.71) and of gluten, the latter being partly replaced by fat in the new bread, which thereby becomes more agreeable for continued use, and retains its softness for a longer time.

TREATMENT OF TRIFACIAL NEURALGIA WITH HYPEROSMIC ACID.

Neuber was the first to treat neuralgias with hyperosmic acid. Instead of his watery solution, which has the disadvantage of blackening and of losing its medicinal properties in three or four days, we note that Dr. SCHAPIRO (*Archiv. Génér. de Méd.*, November, 1885) has recommended the following mixture:

R. Acidi osmici, 1 part;
Glycerinæ (chemically pure), 40 parts;
Aque destill., 60 parts.

He injects 5 drops (containing $2\frac{1}{2}$ mgrm. of osmic acid) of this solution under the skin. Later the dose is increased to 6 mgrm.

The injections made *loco dolenti* occasion exceptionally an exasperation of the pain by exciting branches of the trifacial which previously were unaffected. According to our author, the specific action of hyperosmic acid

upon the nervous tissues depends primarily upon a cauterization of the nerve-terminations, and secondarily upon the narcotic action of the drug.

He has treated eight patients (five women and three men), all suffering from intense facial neuralgia and having resisted every other treatment, with hyperosmic acid, and experienced only a single failure. In this case some central lesions were undoubtedly at the bottom of the affection. About twelve injections sufficed to bring about a complete cure. These results can be regarded as satisfactory, and certainly invite to a trial of the drug in trifacial neuralgia.

THE DIFFERENCE IN THE SYMPTOMS OF STRANGULATED AND OBLIQUE INGUINAL HERNIA.

At a meeting of the New York Medical Society, held November 18, Dr. FREDERICK HYDE read a paper with the above title, in which the following were the principal points developed (*Medical News*, November 28, 1885):

1. In proportion to the length of time an inguinal hernia existed would the symptoms and signs of strangulation be mild and chronic.
2. In a case of long-standing inguinal hernia in which signs of stricture of the bowel are obscure, there not being evidence of total obstruction of the canal, often it is not safe to wait for fæcal regurgitation before deciding that strangulation exists.
3. When strangulation occurs at the first protrusion, the symptoms of strangulation will be found to be more marked.
4. If hiccough and fæcal vomiting existed from nearly the beginning of the symptoms, no time is to be lost, herniotomy should be performed at once.
5. If a swelling exists with symptoms of obstruction of the bowel, the patient complaining of severe pain in the abdomen, but of none in the tumor, and had hiccough, although there is absence of marked general disturbance, a fair trial of taxis should be made, and that failing to reduce the tumor, herniotomy should not be delayed. This remark was based on an interesting case, the history of which Dr. Hyde gave in detail. No fæcal vomiting occurred, no pain in the tumor even after taxis, but there was some pain in the abdomen and hiccough. Because of the mildness of the symptoms the consulting physicians delayed the operation more than twelve days, and when it was finally per-

formed, the strangulation was found to have existed within the abdomen. The patient died.

6. If no strangulated portion be found within the external sac, the finger should be passed internally, and adhesions sought for in the neighborhood of the opening.

7. Too long a trial of taxis before dividing a stricture should be guarded against, as it prepares the way for the death of the patient after herniotomy.

8. After stercoraceous vomiting has set in taxis should not be applied, but herniotomy should be performed at once, although the prognosis is unfavorable.

9. If after opening the sac the omentum is found smooth, and no intestine can be detected, the omentum should be opened to learn whether it may not contain a strangulated portion of intestine. It is unfair to speak of herniotomy as a dangerous surgical operation *per se*. The danger attending the operation is due to the condition of the sac and its contents, and to taxis and delay in operating.

DR. J. W. S. GOULEY read some notes on the same subject, in which he reached the following conclusions :

1. When doubt arises in the mind of the surgeon respecting the existence of strangulation of the intestine or omentum in case of incarcerated hernia, it is his duty to give the patient the benefit of the doubt by at once resorting to the operation of herniotomy.

2. Delay in relieving the strangulation is often fatal, while herniotomy in a case in which no strangulation exists is not usually harmful.

3. Medicinal treatment is often delusive, and local applications, such as opium, tobacco-poultices, ice, etc., are in most cases worse than useless.

4. Persistent taxis is infinitely more dangerous than herniotomy, and such taxis, even when it is followed by reduction of the hernial protrusion, is often the cause of fatal peritonitis.

5. Another, though rare, effect of violent taxis is the reduction *en masse* of the hernia in its state of strangulation, and its result is known.

6. As a general rule, two minutes of gentle taxis, the patient being in a hot bath, will settle the question as to the possibility of safely reducing the hernia.

7. Therefore it may be said with propriety that the less taxis, the less ice, the less other topical applications, the less opium, the less

general or special meddlesome interference which often do serious injury to the intestine, the better the chances of recovery in the event of herniotomy. This is particularly the case in femoral hernia.

He said he had abstained from incising the neck of the sac in femoral hernia, but had made divulsion by simply insinuating the index finger through the free opening made in the sac until it entered the abdominal cavity, and had had no trouble in effecting reduction of the intestine, the object of the procedure being to avoid division of the obturator artery should it be abnormally situated. He coincided with Dr. Hyde that hernia is not *per se* a dangerous operation. Dr. Gouley said further that if it seemed necessary in a case of inguinal hernia, after herniotomy, he would open the abdominal cavity in order to relieve the strangulated intestine.

THE PREVENTION OF MAMMARY ABSCESS.

In our last issue we referred to the method of prevention of mammary abscess recommended by Dr. Edis, by the use of support by means of a bandage or towel. Dr. Edis appears to have used this method after every delivery, and, by beginning it before lactation was established, with assured success. Occasionally, however, one is called to cases where abscess is on the point of forming, either from neglect or injudicious treatment, and where, consequently, something more is required. Under such circumstances, MR. PHILIP MIALl (*British Med. Journ.*, November 21, 1885) states that he has repeatedly seen all the symptoms of a hot, heavy, inflamed breast, with redness of skin, throbbing and deep-seated pain, pulse being 120 in the minute, all disappear in the course of a few hours under fomentation of hot water and ammonia. An ounce of carbonate of ammonia is dissolved in a pint of boiling water, and when solution is effected the temperature will scarcely be too high for fomentation with cloths dipped in the liquid. These must be assiduously applied for half an hour at least, and repeated for two or three hours if necessary. It is well to protect the nipples, though Mr. Miall states that he has never known them to be injured. Relief is immediate, and more than three applications are seldom required. According to Mr. Miall, unless applied too late or improperly, or some foolish rubbing or drawing with the breast-pump be used, this remedy may be thoroughly relied upon.

THE ANTIPHLOGISTIC ACTION OF MENTHOL.

DR. SELWYN A. RUSSELL, of Albany, New York, writes to the *Medical Record*, November 21, 1885, to call attention to the use of menthol as an antiphlogistic and anodyne remedy in superficial inflammations, in which, he says, its effects are truly remarkable. "My discovery of its value in such conditions was quite accidental; a patient who was suffering from acute aural perichondritis, failing to obtain relief from the usual anodyne applications, bethought himself of menthol, which he applied by means of the ordinary pencil; the relief from pain was immediate, and from that time, to my surprise, the inflammation quickly subsided. I have since made frequent use of it, and I believe inflammations have aborted which, without it, would have ended in abscess; and in addition the pain, itching, heat, and swelling have been considerably reduced. I have used the ethereal solution (alcohol is also a good solvent) in the strength of from ten to fifty per cent., applying it by means of a camel's-hair pencil. The applications may be made two or three times a day, or more or less frequently according to the indications. A solution in one of the fixed oils may be used on mucous membranes. I have observed the good effects of menthol more especially in boils, carbuncles, excessive inflammation following vaccination, etc. The employment of this substance in superficial neuralgias, for its anodyne effect alone, is often very satisfactory, but its use in this way has been noticed and written upon by others."

ON THE PROPERTIES AND PREPARATION OF PEPTONE.

The medicine, or rather aliment, called peptone, has of late been so frequently referred to in the medical press, that it is well to gain a clear perception of its properties and method of preparation. We abstract from the *Pharm. Zeit.* of November 25 the following instructive items on peptone:

It is usually assumed that peptones are gained by hydration from albumen, such as egg-albumen, caseine, proteine, and meat-albumen, and that this hydration takes place, if pepsine, pancreatic juice, or papaya-juice, in an acid solution, are made to react on the mentioned albuminous substances. This assumption is all the more justifiable, as peptone can be retransformed into albumen by dehydrating substances. It was believed for

a long time that the latter reaction took place within the human economy until Hofmeister proved experimentally that peptone passes the kidneys unchanged, unless the white blood-corpuscles of the intestinal mucous membrane have appropriated it. According to this author, then, no such retrograde change as formerly believed takes place.

The mode of preparation of peptone is very variable. Some use eggs, some meat, others again milk, while papaya-juice, pepsine, or pancreatic juice are selected by still other manufacturers. It is clear that the preparations of peptone are consequently very different in concentration and physiological action.

The chemical properties of an eligible peptone preparation are as follows:

1. Mixed with at least two parts of water, peptone ought to form a perfectly fluid non-gelatinous liquid.
2. A ten per cent. solution should not grow turbid on the addition of acetic acid, muriatic acid, or ferrocyanide of potassium.
3. On the addition of a solution of picric acid or of tannic acid, yellow flocculi should appear.
4. With sulphate of copper in strong potash solution a violet color should result.

THE TREATMENT OF HABITUAL CONSTIPATION.

The treatment of constipation is one of the most ordinary, and, at the same time, one of the most important and puzzling problems in clinical practice. It is the common fault of the great proportion of the very numerous remedies in the therapeutic arsenal employed with this object that they either produce too rapid, too violent, or too drastic an effect, that they are weakened in their after-result, and that they will not produce their characteristic effects over any lengthened period of time. The remedies which appear most satisfactory for relieving this condition are the various mineral waters, especially those containing a large percentage of sulphate of magnesium and sulphate of sodium. The natural mineral waters which are familiarly known throughout Germany as "bitter waters," the best known being Pullna, Hunyadi Janos, and Friedrichshall, have already acquired great popularity as efficient aperients, the sole objection which is urged against them being that their activity becomes impaired through continuous use: this defect has, however, recently been shown to be capable of correction

when the mineral waters are combined with the chlorides; and, of all the natural waters, Friedrichshall appears to be the best, as it has been found not to lose its aperient properties through continued use, or even to require an increase of dose. MR. ALFRED S. GUBB reports a number of cases in the *Medical Press*, November 11, 1885, where he has employed it with extremely satisfactory results as a corrective of habitual constipation.

Mr. Gubb administers it in doses of from half a tumbler upwards, taken early in the morning, and combined with an equal proportion of hot water, this being the most effectual method of administering Friedrichshall water for this purpose. He has used it largely for persons of both sexes, and it seemed to be especially advantageous as a mild laxative, exceedingly well fitted for all ordinary cases, and this more particularly for persons of delicate constitution, for women, and for all other persons in whom the object is to produce an aperient effect which should not be drastic or productive of constitutional disturbance. It is often a great object to be able to produce a distinct laxative impression without disturbing the digestion or interfering with the ordinary daily occupation of patients engaged in business pursuits. Here he has found that Friedrichshall water produces its effects by rendering more fluid the intestinal evacuations, and by freeing the intestine of its contents without interfering with the process of digestion or impoverishing the blood. These qualities render it peculiarly suitable for administration to weak or anæmic persons in whom it is important that the laxative employed should not be too concentrated or its influence on the mucous membrane of the intestine too strong.

The mildness of the effect of Friedrichshall water in these cases is, according to Mr. Gubb's observations, well marked. In no case, even after prolonged use, did it prove in any way excessive, and when its use is abandoned for a time, the constipation only recurs gradually when its regulating action on the intestines has given place to the habit of the body or errors in diet which produced the tendency to constipation in the first instance. The non-occurrence of the reactionary constipation which so generally follows the habitual use of aperients is doubtless to be attributed to the large quantity of chlorides present in Friedrichshall water, and to their favorable influence on the progress of digestion and diffusion. In short, the class of cases in which he has found this water of especial

service comprises hemorrhoids accompanied by habitual constipation, hepatic congestion, and in the constipation of pregnancy, which is so often complicated by derangements of the digestion, headache, and dyspnoea. There are many cases of cardiac disease and of cardiac irritability in young people in which it is very serviceable in continuous and diminishing doses. It has long had a high reputation in the treatment of gravel, and for the prophylactic treatment of renal calculi, but of this Mr. Gubb is unable to speak from experience. It has appeared to produce a favorable impression in the numerous cases of strumous and glandular swellings, where we have to contend with a sluggishness of the bowels and of tissue-change generally. Here Friedrichshall water acts as a stimulant as well as an aperient. A certain diuretic effect which is manifested is not uncommonly of service in cases where it is desired to increase the proportion of watery constituents of the urine. It is less adapted to cases of renal disease where our object is to produce copious watery evacuations of a drastic nature, but to lessen venous congestion by gentle and continuous means Friedrichshall water is peculiarly indicated, and is perhaps without a rival.

THE TREATMENT OF CHRONIC SPRAINS.

MR. C. W. MANSELL MOULLIN read an interesting paper on the pathology and treatment of chronic sprains at the last annual meeting of the British Association, which contains many points of interest (*British Medical Journal*, November 21, 1885).

Muscular wasting is one of the main and prominent symptoms in chronic sprains which calls for treatment, and is a serious complication to the condition of which muscular debility is the main feature. It tends to perpetuate the trouble, and aggravate it in every way. Fortunately, in galvanism, systematically and regularly applied, there is a powerful ally. Meantime, by means of rest, counter-irritation, pressure, and the use of absorbents, the inflammation can be reduced and the effusion absorbed; and then attempts must be made to restore the muscular system to its normal strength by all the means in our power; orderly and well-regulated exercise, arranged with a view to definite ends, never carried too far, either in extent or time; massage, to improve the circulation; galvanism, to restore the tone; cold bathing, shampooing, and, above all, tonics, fresh air, and

good food. Like most other things, it is easier to prevent than to cure ; and, provided due attention be paid and a little watchfulness exercised, there need be no apprehension of this condition supervening, even if growth be as rapid as it often is at the time of puberty. Regular and systematic exercise is all that is required, taking care to avoid sudden violent strains and overfatigue of any special set of muscles.

ON THE INFLUENCE OF ANTIPYRIN ON THE TISSUE-CHANGES AND ASSIMILATION IN FEVER PATIENTS.

Antipyrin having undoubtedly secured a prominent place among our antipyretic medicines, it is desirable to study the general influence which the drug exercises on the economy in the state of fever.

DR. WALTER, of St. Petersburg (*Wratsch*, No. 30, 1885), gave antipyrin to four fever-patients (pleuro-pneumonia, pleuritis, typhoid fever, and tuberculosis) in doses of 3 to 8 grms. (45 to 120 grs.) *pro die* without observing any unpleasant after-effects, except some nausea and sweating. On heart and brain no noticeable impression was made by the drug ; but alongside of the reduction of the febrile temperature Walter observed also a reduction in the nitrogenous tissue-changes, and ascertained, likewise, that the assimilation of proteids was materially favored by the drug.

We regret to have at present no details yet of these interesting investigations.

RECURRENT LARYNGITIS AND OBSTRUCTION OF THE NARES.

DR. E. FLETCHER INGALS read a paper before the Illinois State Medical Society on the above subject, of which the following are the conclusions (*Journal of the American Medical Association*, December 5, 1885) :

1. Recurrent laryngitis is usually dependent upon obstruction of the nasal cavities.
2. This obstruction, in the majority of cases, is caused either by deflection and thickening of the septum, or by what is known as hypertrophic catarrh.
3. To effect a permanent cure the obstruction must be removed.
4. The operative procedures necessary for the removal of these obstructions may be made painless by the use of hydrochlorate of cocaine.
5. This method of treatment, properly carried out, may be relied on to cure the catarrh and the laryngitis which it has caused.

6. Great improvement in the general health often results from the removal of the nasal obstruction.

7. In acute colds or exacerbations of hypertrophic catarrh, immediate relief may be obtained by the insufflation as often as needed of small quantities of cocaine.

THE APPLICATION OF ACUPUNCTURE TO THE TREATMENT OF CERTAIN FORMS OF CHRONIC RHEUMATISM.

DR. G. LORIMER, in a paper with the above title read before the Section of Medicine at the last meeting of the British Medical Association in Cardiff (*British Med. Journ.*, November 21, 1885), calls attention to a mode of treatment of chronic rheumatism which at one time seemed to enjoy considerable popularity, but which has latterly fallen into disuse. Dr. Lorimer thinks that in this method we have a very valuable mode of treatment, and he reports twelve cases of various forms of chronic rheumatism, in nearly all of which improvement and freedom from pain resulted. Dr. Lorimer summarizes as follows the results at which an extensive experience in its use has led him to arrive :

In chronic rheumatism of the muscles and their fasciæ and aponeuroses, there are usually three conditions present : 1, pain ; 2, impaired mobility or muscular disability ; and, 3, impaired nutrition, leading to muscular atrophy. The last condition is not always present, and is most marked in cases of a pronouncedly chronic character. The first two conditions may occur separately or conjointly. They may coexist in equal degree, or they may occur each in greater or less degree.

Acupuncture may be employed with advantage for the relief of pain for the removal of muscular disability ; and, with the removal of the latter condition, muscular atrophy is usually improved. Acupuncture, however, is less certain and efficacious in the relief of pain than in the treatment of muscular disability. For the relief of the latter condition, however, as well as sometimes for the former in rheumatism of the lumbar muscles, of the muscles of the thigh, and of the muscles of the arm and shoulder, the effects are sometimes signally efficacious.

With regard to the last-mentioned situation (namely, the shoulder), the relief from muscular disability is most marked when the disablement is referred to a point situated in the central or lower part of the deltoid muscle.

When situated in the upper part relief is less frequent, and when above the scapular spine it is very seldom obtained. The certainty of relief is in proportion to the limited area of obstruction to movement; if, however, the area of obstruction to movement be extended and indefinite, success is less likely to result. In some cases galvano-puncture succeeds when acupuncture fails.

After the removal of the needle at the seat of puncture there frequently appears a red areola, from half an inch to two inches in diameter. The appearance of this areola bears a direct relation to the success of the operation. It is generally absent in cases where the action is inert, and the result negative.

In the removal of muscular disability the action of acupuncture is immediate. The maximum amount of muscular power, however, obtained from its application is gradual, being from ten minutes to one hour after the removal of the needle.

It is doubtful if any benefit is obtained from retaining a needle beyond two minutes in the treatment of cases of muscular disability. More benefit is obtained from increasing the number of needles than prolonging the time of their insertion. With regard to relief from pain, however, the converse is true.

When extensive muscular atrophy is present, relief is doubtful. When the latter condition is present, and is an obstacle to improvement, galvano-puncture may succeed after acupuncture has failed. For the relief of pain several applications may be required, each of some hours' duration. Cases which most frequently receive benefit in relief from pain are those of subacute inflammation of fibrous tissue, myalgia, and anomalous forms of rheumatism, which sometimes attack the surrounding structures of articulations subsequent to injury. In some instances, after the application of acupuncture-needles, pain may be removed, but it may pass to the corresponding situation on the opposite side of the body.

After the application of the needle there is generally experienced, at the point of insertion, and for some distance from it, a feeling of coldness or numbness, or a sense of prickling or heat. Syncope seldom occurs from the employment of acupuncture.

Acupuncture is less frequently followed with beneficial results in muscular disability, and muscular atrophy consequent on sciatica.

The needles employed are about two inches in length, or longer. They are set in round

handles, and should be introduced with a gentle rotary motion.

TUBERCULAR MENINGITIS CURED BY IODOFORM.

A Swedish physician, DR. EMIL NILSSON, alleges that he has cured an undoubted case of tubercular meningitis by frictions on the shaved scalp with iodoform ointment (1 to 10). The patient was a boy, aged 8, whose mother had a family history of phthisis, and four of whose brothers and sisters had died from tubercular meningitis. The symptoms in this child's case were similar to theirs,—headache, torpor, convulsions, strabismus, and pyrexia. He was at first treated with calomel and iodide of potassium, but did not improve; and, after having been under treatment a week, became distinctly worse, being unable to take food or medicine. The pallor of the face, which had pre-existed, gave way to flushes of the cheeks. The child threw himself out of bed, and presented several clonic spasms of the limbs and of the facial muscles. The head was then shaved, and iodoform ointment rubbed in, an oil-skin cap being put on. The friction was repeated three or four times in the day, and the next day there was a decrease in the convulsive movements, the sleep was calmer, and the spasmodic contractions, which had previously been excited by the slightest noise, now ceased to be so. Consciousness shortly afterwards returned, and the child's face became of a more natural color. This, however, was accompanied with a severe coryza, redness of the lips, and an irritable cough, the breath smelling strongly of iodoform. The ointment was discontinued, and syrup of iodide of iron given. The unpleasant symptoms rapidly disappeared, and the child was soon running about in good health.

HEMORRHAGIC AMBLYOPIA CURED BY DILATATION OF THE SPHINCTER ANI.

The following case seems to well illustrate two points: first, the serious amount of amblyopia liable to be produced by frequently-recurring hemorrhages extending over a long period of time; and, second, the value of the surgical procedure of free dilatation of the sphincter ani under ether. MR. ROBERT N. HARTLEY (*Med. Times and Gazette*, November 28, 1885) was consulted by a man who was gradually losing his eyesight, the distant vision of each eye being only equal to twenty-seventieths, while no type smaller than 14

Jäger could be read. There was nothing, however, in the appearance of the eyes to account for so much defect except a slight pallor of the disks. Questioning elicited the fact that for ten years he had suffered from repeated bleedings from the anus, and the bowels were never moved without great pain, and seldom without bleeding, sometimes slight, often profuse, and for the last three months he had frequently to leave his work and go home on account of severe bleeding. He was constantly taking either purgatives or astringents, and the introduction of the finger into the bowels caused such intense pain that a thorough examination was impossible without an anæsthetic. A few days later he was put under ether, and Mr. Hartley found an enormously powerful sphincter ani, the internal fibres being especially marked as rigid rings extending for some distance up the bowels. Mr. Hartley freely and thoroughly stretched, with the fore and middle fingers of each hand, the rigid sphincter until all signs of resistance had ceased and all the fingers of one hand, in the form of a cone, could be easily pushed into the rectum. The congested and swollen mucous membrane now protruded, and the surface of it was seen to be here and there marked by ulcerated patches, which had been no doubt the chief source of the hemorrhage. Nothing more was done except the swabbing of the parts with carbolyzed glycerin. After three days' rest in bed the bowels moved spontaneously for the first time with little or no pain and no bleeding, and six weeks afterwards he reported that he had never bled once since the operation, had never taken a dose of medicine, that his bowels acted every morning without pain or difficulty, and that his sight was perfectly normal.

ELECTRICITY AS A THERAPEUTIC AGENT IN GYNÆCOLOGY.

From an elaborate study of the value of electricity as a therapeutic agent in gynæcology, DR. PAUL F. MUNDÉ draws the following conclusions (*American Journal of Obstetrics*, December, 1885) :

1. Electricity locally applied is a valuable agent in gynæcological practice, and should be more widely used than it is.

2. It does not require special knowledge or experience as an electrologist to be able to use the agent safely and beneficially in gynæcological practice.

3. The remedy, if properly used and on correct indications, cannot do harm.

4. It should be used only in chronic conditions, and if it is the galvanic current, should give no pain.

5. The conditions in which the faradic current is indicated are chiefly those characterized by deficient development or want of tone of the sexual organs, such as imperfect development of uterus and ovaries, superinvolution, subinvolution, amenorrhœa, uterine displacements, interstitial fibroids. The object of the faradic current is to stimulate the organs to increased growth or activity, and to produce muscular contraction.

6. The conditions in which the galvanic current is indicated are those in which it is desired to promote absorption of adventitious products, chiefly the result of previous inflammation, to allay pain, to excite reparative action, and occasionally to act as a caustic. The rapidly-interrupted galvanic current, however, also excites muscular contraction.

7. Perseverance in the treatment is essential to success.

8. Acute and subacute inflammatory conditions, as a rule, counterindicate local treatment by electricity.

9. The pathological conditions in which electricity proves useful are those in which other treatment often fails, or cannot be borne by the patient.

10. In organic diseases, a permanent cure, or a restoration of the diseased organs to perfect health, can usually not be accomplished by electricity ; but great relief from pain, and certainly temporary improvement in otherwise intractable cases, can be achieved by it without danger, and with comparatively little discomfort to the patient.

THE OLD AND NEW TREATMENT OF CORYZA.

In the *Deutsche Medis. Zeitung* of November 30, 1885, we find an interesting letter of DR. KRAKAUER, of Berlin, on the treatment of coryza, embracing his experience on himself and a number of patients.

This physician was affected with a chronic rhinopharyngitis, which showed a violent exacerbation every two or three months. Two minute doses of belladonna, taken in intervals of four hours, always succeeded in checking the highly inconvenient secretion of the nose (which was strong and copious enough to produce an eczema of the nares and upper

lip), but did not in any way abort or shorten the coryzic process itself. The nose remained as stopped up as before.

With cocaine, however, Krakauer obtained much more satisfactory results. As soon as the exacerbation was noticed to set in (sensations of tightness and itching in the nose, and inclination to frequent sneezing), he inserted into each aperture of the nose a tampon three to four cm. long, saturated with a five to ten per cent. solution of cocaine. In every instance all the mentioned symptoms were invariably suppressed, and the coryza itself prevented from actually setting in. The tampon was allowed to remain *in situ* for four to five hours, and no further medication was needed.

The same procedure has since proven a success in a number of coryza cases that came under the observation of Dr. Krakauer. Applications of tampons saturated with a ten per cent. solution of menthol were found to give equally satisfactory results in coryza. Both applications deserve to be borne in mind.

THE PRESENT STATE OF THE ERGOT QUESTION.

DR. RUDOLPH KOBERT publishes in the *Practitioner* (December, 1885) the following summary of the results of his investigations as to the influence of the different constituents of ergot upon the pregnant uterus:

Ergotinic Acid.—Dr. Kobert has administered this substance and its sodium salt internally and hypodermically to pregnant bitches, rabbits, cats, and sheep. The doses given were at first small, and then increased, until finally they were toxic. The result of all these experiments entirely agreed with his former ones. When administered internally, even the largest doses are well borne, without the supervention of uterine contractions and without any material disturbance of the mother. At most the stools become semi-fluid. When injected subcutaneously, relatively large doses cause complete narcosis, lasting twenty-four to forty-eight hours, during which reflex action ceases. Nevertheless, neither contraction of the uterus nor expulsion of the young occurs.

After very large doses the blood-pressure falls very low, and, as a consequence, the young die, but are not expelled.

From these experiments it will be seen that ergot of rye does not owe its ecboic power to the ergotinic acid contained in it, and that we may consider as clinically worthless all preparations of ergotinic acid and of sclerotinic

acid (so called) and all aqueous extracts which do not contain these principles which are soluble in alcohol. Hence it follows that the extractum secalis cornuti of the Pharmacopœia Germanica, Editio II., is worthless.

Cornutine.—This substance is now prepared and supplied commercially by Gehe & Co., Dresden, and is not to be confounded with the very different ergotinine of Tanret. The latter is quite inert. The former, however, produces uterine contractions both in animals which are pregnant and in those which are not pregnant, but with this difference, that in the latter the contractions are accompanied by coincident vomiting, diarrhœa, salivation, and irregularity of the pulse; but in the former the irritability of the uterus is much increased, and, as a consequence, the uterine movements come on after doses so small that no other symptoms at all appear. Consequently, it was always possible, in dogs and cats, to bring about the expulsion of the fœtus without seriously jeopardizing the life of the mother, when the cornutine was injected subcutaneously. It was a matter of no consequence whether the young were mature or not. The amount necessary to this result was less than an eighth of a grain. Gehe's preparation not being as yet a chemically pure one, must be administered in larger doses.

Sphacelinic Acid.—This is a resinous body, insoluble in water, and consequently must be administered by mouth in the form of an emulsion. In dogs and cats a sufficient dose never failed to evoke powerful labor-pains in the pregnant uterus, followed rapidly by the birth of the fœtus; yet, not one of the mother-animals lost her life in consequence. The contractions after this substance Dr. Kobert describes as being tonic, and after the cornutine as being clonic.

From the foregoing it will be seen that in the ecboic action caused by ergot both cornutine and sphacelinic acid take part.

Dr. Kobert states that cornutine acts by influencing directly the centre for the uterine contractions situated in the spinal cord; but sphacelinic acid acts directly upon the uterus itself. And the combined action of these two substances is necessary if it is wished to produce the action of ergot upon the uterus and yet avoid any other untoward effects. Therefore the only rational preparation for use in cases of parturition is one which contains all the cornutine and sphacelinic acid but no ergotinic acid, for the latter is very injurious to the stomach and has no influence upon the

uterus. Such a preparation, when administered internally, was, when fresh, exceedingly active, producing abortion with absolute certainty in pregnant animals. In the form of pills, it has been employed with success in man to stop hemorrhages in various organs, and also in the treatment of vascular dilatation in cutaneous diseases. Unfortunately, it does not keep well for more than six months, and must each year be prepared afresh. A preparation a year old is almost absolutely worthless. It is necessary to state that neither ergot itself, nor any of the numerous commercial and European and American preparations which Dr. Kobert has examined, have retained their therapeutic powers for more than twelve months. Of course the ergotinic acid remains unaffected, but this is valueless.

The preparation of an active extract depends upon the solubility of cornutine and sphacelinic acid in absolute alcohol, in which latter ergotinic acid is insoluble.

It is only necessary to bruise well the fresh ergot, and to exhaust thoroughly with the strongest alcohol. After evaporation of the alcohol at a low temperature, there remains a residue, consisting of the inert fatty oil, and the whole of the cornutine and sphacelinic acid. A portion of the oil may be previously got rid of by extracting with ether, but at the sacrifice of a small amount of the active substances. The extract thus prepared is not well suited for subcutaneous injection. The dose cannot be foretold, because the proportion of active principles present in ergot varies exceedingly with the year and the district.

As the extract of ergot is usually prepared in November, it is to be hoped that this article will be of the greater utility.

CONVALLARIA MULTIFLORA IN HEMORRHOIDS.

DR. J. W. HAMER (*Columbus Med. Journ.*, December, 1885) has used a decoction of the root of convallaria multiflora with considerable success in the internal treatment of patients suffering from piles. His method of administration was to boil one or two ounces of the root in a pint of sweet milk, to be drunk in the course of a few hours, taking about two ounces at a time, a fresh decoction being made every day. Dr. Hamer reports six cases, in four of which great relief was obtained, while in the other two no fair test was given the drug. He finds that it acts best in those persons who have a sluggish

condition of the portal system and have frequent bilious attacks. He believes that it does not cure hemorrhoids by relieving the patient of constipation, for where constipation was found it still existed after the patients were cured, but that it acts by restoring tone to the flaccid condition of the hemorrhoidal veins. The drug should be used for at least one week before stopping its use, and the fresh root should be employed in all cases, as by long drying it appears to become inert.

PURE TEREbene IN THE TREATMENT OF WINTER COUGH.

DR. WILLIAM MURRELL states, in the *British Med. Journ.*, December 12, 1885, that he has notes of one hundred and fourteen cases of winter cough which were all treated with pure terebene, a substance prepared by the action of sulphuric acid and oil of turpentine. He states that it is an agreeable remedy, being a clear, colorless liquid, with an odor like that of fresh-sawn pine wood. It will not mix with water, but as the dose is small it can readily be given on sugar. This must not be confounded with the patent medicine sold under the name of terebene. The best method of indicating the sphere of action of this drug and of illustrating its utility will be to give a brief abstract of the notes of one of Dr. Murrell's cases.

R. N., aged 43, a commercial traveller, stated that he had been subject to cough every winter for twelve years. His work was against him, and he was a good deal exposed to wet and cold and the inclemency of the weather. His cough used to trouble him badly only in the winter, but year by year it seemed to be coming on earlier, and now he was hardly ever free from it. It came on in fits, which shook him to pieces, and it was always very bad the first thing in the morning, often making him retch and vomit. There was a great deal of phlegm, thick and yellow, when he was in the country, but speckled all over with black in London. It was difficult to get up, unless he could get some hot tea or something to loosen it. The shortness of breath was worse than all, for it prevented him from going about, and interfered with his business. He had never spat any blood worth speaking of, but there were at times streaks after a severe bout of coughing. He became no thinner, generally losing a little in the winter, and picking up again in the summer. He had had a great deal of treatment, and mixtures, lozenges, and liniments

without end. On examining the chest, it was found to be emphysematous, and there was a loud bubbling rhonchus at the base of each lung. On November 1 he was ordered 10 drops of pure terebene on a piece of sugar every four hours. In three days he returned, and said there had been a marked improvement; the cough was easier, the phlegm was lighter in color and not so thick, and the breathing was decidedly better. The dose was increased to 20 minims every four hours, and a week later the patient wrote to say that he was better than he had been for years, and was almost able to do without the medicine. Dr. Murrell saw nothing of him again until January 6, when, being in town, he came to see him. There had been some return of the old symptoms, and he was anxious for further treatment. Dr. Murrell ordered him a small Maw's spray-diffuser, holding about an ounce, and instructed him to use it with the terebene, as an inhalation, several times a day. A fortnight later he wrote, saying that he had bought a larger apparatus, and that his complaint was more amenable to treatment than it had ever been before. The terebene-spray eased the cough, brought up the phlegm, and, above all, relieved the shortness of breath. On his long railway-journeys, when he was unable to use the spray without inconveniencing his fellow-passengers, he rubbed the terebene on his moustache and beard, so that it might slowly diffuse, and, as he said, "softened the atmosphere."

One of the great advantages of pure terebene is that it is not a bulky medicine. An ounce bottle, carried in the pocket, will last for days, and is always ready for use. It is best to begin with 5 or 6 drops on sugar every four hours, and gradually to increase the dose to 20 minims. This is, for most people, the maximum quantity, but the drug has little or no toxic action, and one patient was so enraptured with his remedy that he insisted on taking a teaspoonful every four hours for a week. The only disadvantage Dr. Murrell has ever noticed from its employment is that it gives a peculiar and characteristic odor to the urine, a circumstance which patients never fail to mention. When used as a spray, from 1 to 2 ounces should be diffused and inhaled every week. In some instances he has tried giving it mixed with an equal quantity of olive oil, flavored with oil of peppermint. In twenty-five cases he has given the terebene in the form of an emulsion, made by mixing it with a little tragacanth powder, adding water and shaking well. Each ounce of the emul-

sion contained a drachm of the terebene, and it was usually given in $\frac{1}{2}$ -ounce doses, four times a day. The results were excellent, but not better than with the simple terebene itself, and he saw no reason for continuing the use of a more expensive preparation. In every case of winter cough in which the terebene-spray was used systematically there was a marked improvement. In many instances it was noticed almost immediately, but in other cases, especially the very chronic ones, the patient had to continue using his remedy for some weeks. Even when there was marked emphysema, with little movement of the chest-walls, some benefit was experienced. He treated eighteen cases of phthisis by the same method, and the results were certainly most encouraging. It did most good when there was old consolidation, when no active mischief was in progress, and especially when there was no elevation of temperature. He has also used it as a dry antiseptic inhalation on the cotton-wool of a respirator in phthisis, and has been much pleased with the results. In one case, that of a young lady, the respirator was worn almost continuously night and day for nine months; and the right lung, which was breaking down, cleared up, the temperature becoming normal, and the cough and other symptoms subsiding. Dr. Murrell thinks that terebene may be useful in checking hemorrhage from the lungs, but has no data to offer.

Many sufferers from winter cough also complain of acidity and flatulence. He soon found that the internal administration of pure terebene was an excellent remedy for this combination of symptoms. It checks the formation of flatus so quickly, and is so efficacious in expelling any that may remain in the stomach or intestines, that he constantly employs it in cases of dyspepsia when flatulence is a prominent symptom. Patients like it, and often continue taking it for months or years. It acts as an antiseptic, probably in much the same way as glycerin, oil of cajuput, and oil of eucalyptus. He evinces surprise that it has not come more largely into use in the treatment of flatulence.

Pure terebene is of such value in winter cough that he rarely resorts to other remedies. This year, however, he has tried a combination consisting of equal parts of pure terebene, oil of cubebs, and oil of sandal wood, mixed with liquid vaseline. This he uses in an atomizing apparatus invented by Mr. W. F. Semple, of Ohio, an apparatus which is somewhat complex and difficult of descrip-

tion, but may be said to consist essentially of a jar in which the medicated fluid is finely atomized by a blast of air propelled by a rubber ball. A nose-tube is attached, and the fine spray is inhaled either through the mouth or nostrils. It is certainly one of the best forms of spray-apparatus ever invented, and, when used with a cocaine solution, will be found wonderfully efficacious in the treatment of hay-fever and coryza. The formula Dr. Murrell has given yields excellent results, not only in winter cough, but also in post-nasal catarrh. He has made some observations on this point, in conjunction with a well-known tenor, and has been astonished to note what a marvellous difference there is in the tone of his singing-voice after using it for only a few minutes. It is a powerful expectorant, and, if inhaled the first thing in the morning, when the mucous membranes are covered with thick, viscid secretion, will give very great relief. Pure terebene is a valuable remedy, and will in time come largely into use.

*SUPPURATION AROUND THE VERMIFORM
APPENDIX TREATED BY ABDOMI-
NAL INCISION.*

At the meeting of the Clinical Society of London held December 11, 1885, DR. THOMAS BARLOW and MR. R. J. GODLEE (*Med. Times and Gazette*, December 19, 1885) read a paper relating to a man, aged 20, whose previous history was unimportant, except that for the last two years he had been subject to attacks of diarrhoea and vomiting. His illness began rather acutely on September 12, 1885, with loss of appetite, severe abdominal pain, and, later, vomiting and absolute constipation. He was admitted into University College Hospital on the 15th, with a temperature of 102.4°, intense abdominal pain and tenderness, intermittent bilious (not stercoraceous) vomiting, and tight distention of the abdomen. There was a small patch of slight redness in the right iliac fossa. The diagnosis appeared to be between mischief about the appendix and constriction of the intestine by a band high up. He was given opium and iced beef-tea, and ice was applied to the abdomen. The temperature fell to normal, and the pulse was about 90, full and soft, the tongue dry, and the color good; but, as the symptoms were unrelieved, an exploratory incision was made in the middle line on the night of the 16th. General early peritonitis was found, but lymph only in the neighborhood of the cæcum, surrounding a collection

of fetid pus. The vermiform appendix was much thickened. A second incision was made over the right iliac fossa, and a large drainage-tube was inserted through it, reaching down to the appendix, a smaller one being placed in the median incision, which was closed with sutures. The peritoneum was first washed out with a solution of corrosive sublimate (1 to 500). The patient made an excellent recovery, the temperature remaining normal, and the pulse about 90. He was fed principally by the bowel for some time; beef-tea and arrowroot were allowed on the twentieth day, and minced meat a fortnight later. No drugs were given except morphine for the first two days. Thirst was allayed by means of warm-water enemata. He had slight albuminuria a day or two after the operation, and a little later a parotid bubo occurred, which did not suppurate. It was claimed that the uncertainty of the diagnosis justified the exploration, and that the early evacuation of the putrid pus rescued the patient from a condition of very great danger, and prevented the matting together of the intestines, which would otherwise have occurred. The freedom with which the peritoneum might be treated was pointed out, and the advisability of withholding food from the stomach for a prolonged period in such cases was insisted upon. Remarks were also made upon the absence of peritonitis and the presence of albuminuria as points in the diagnosis, and upon the relation between inflammation of the parotid and diseased states of the peritoneum.

THE PHYSIOLOGICAL ACTION OF GRINDELIA ROBUSTA.

DR. JOHN A. BUFFINGTON arrives at the following conclusions in a graduation thesis as to the physiological action of *Grindelia robusta* (*American Journ. Med. Sci.*, January, 1886): *Grindelia* was found to be not actively toxic. The lethal dose of the fluid extract, the preparation used in the experiments, was 3ii to 3iii for rabbits weighing twenty-eight ounces to thirty-two ounces, and mx to mxv for frogs weighing one ounce; and the time required to cause death was one to three hours in the former, and half to one hour in the latter.

Grindelia first lessens, then destroys sensibility, the action beginning in the peripheral end-organs, then involving the trunk of the nerves, and ultimately the spinal cord. Motility is affected in the same order, the paraly-

sis beginning in the nerve-terminals, then involving the nerve-trunks, and finally the motor centres in the spinal cord.

The heart is slowed because of an increase of inhibition, due to stimulation of the cardiac inhibiting centre, and the blood-pressure is raised, chiefly by stimulation of the vaso-motor centre in the medulla. The respiration is increased in frequency by an action of the agent on the respiratory centre, and also on the terminals of the pneumogastric in the lungs. Toward the end the respiration becomes slower, and is jerky in character, and death ensues by arrest of respiration, the heart continuing its action some time longer.

The cerebral effects of grindelia are quite pronounced. A condition of narcosis, more or less profound, ensues as the effects of the drug develop. This action appears to be due to a direct impression made on the cells of the cerebral lobes.

A marked increase of the urinary secretion was noted in all the animals experimented on. As some constituents of the drug appear in the urine (the resin?), a direct action on the renal structure may be admitted. The increase in the blood-pressure is another factor, and, it may be, the chief one.

This investigation throws light on the nature of the curative effects exerted by grindelia in asthma, for the relief of which hitherto it has been chiefly used. The cerebral, the cardiac, and the renal actions, however, suggest its use in other maladies.

Reviews.

PRACTICAL SURGERY, INCLUDING SURGICAL DRESSINGS, BANDAGING, FRACTURES, DISLOCATIONS, LIGATURE OF ARTERIES, AMPUTATIONS, AND EXCISIONS OF BONES AND JOINTS. By J. Ewing Mears, M.D. Second Edition.

Philadelphia: P. Blakiston, Son & Co.

The propriety of writing condensed and brief descriptions of surgical affections and their treatment has always been a questionable proceeding with us; but every now and then a work, the merits of which are undeniable, is placed in our hands, and we are compelled to grant its author the praise due him. To this class we would assign the work of Dr. Mears. Our author has not attempted too much. He has limited himself to the above-named subjects; and his work, while concise, is not slighted, so that the book cannot fail to aid the student in acquiring a knowledge of the subjects which it treats. Indeed, the busy

practitioner may with benefit turn for information to its pages.

Part I. considers "*Surgical Dressings.*" This most important element in the successful results of treatment in all surgical operations cannot be too urgently insisted upon; and all information relating to the subject ought to be sought after by the surgeon. Dr. Mears has given us a very full section upon the various means we may employ and their methods of application. Antiseptic dressing of wounds has, as it should, been well and minutely dwelt upon. Full directions in the application of Lister's dressing, and also modifications of the same, are given. The various agents that have been employed and advocated by different surgeons, in order to assist in the healing of wounds, and the method of preparing them, are given. We are glad to see our author calls attention to the means of drainage introduced by Mr. Chiene, who employs catgut arranged in a special manner, which we regard as one of the best, if not the best, method of drainage yet devised. The buried suture introduced into surgery to obviate the employment of any drainage substance whatever is a method of dressing which we can, from our personal knowledge of its use, speak most favorably of, and regret Dr. Mears has not given a description of its application.

Part II. treats of "*Bandaging,*" in which the methods of applying the *roller*, *Mayor's system of handkerchief dressings*, and *immovable bandages* are fully described. The cuts illustrating the manner of applying the different bandages are numerous, and will be found to greatly aid in comprehending this very important part of the treatment of surgical lesions.

Part III. discusses "*Fractures.*" This section is an addition to the present edition; and while it is, in our opinion, too brief to do justice to this very important division of surgery, yet we have been quite favorably impressed with the arrangement and the writer's descriptions and treatment of these lesions. The part which treats of fractures in general, their cause, symptoms, diagnosis, prognosis, and treatment, appears to us particularly good, and gives evidence of the author's practical experience and acute observation. The advice given under special fractures for their treatment may safely be followed. In fractures of the skull we think it would have been a valuable addition if a more detailed account of the indications for performing the operation of trephining had been included

under these lesions. The transfixing of the nasal bones in cases of their fracture by means of a pin, as advised by Mason, is a most simple and very efficient method of treatment, and far more comfortable for the patient than the means recommended by our author, of pieces of catheter or waxed sponges introduced into the nasal cavity. In the treatment of fracture of the patella Dr. Mears has given us the various methods which are generally employed, but has omitted the more recent treatment introduced by Lister, and now advocated by other surgeons, who have adopted it with unusual results. We refer to cutting down upon the fragments, and wiring them together under strict antiseptic precautions.

Part IV., on "*Dislocations*," is also a new section to this edition. It includes everything of any importance in relation to these lesions. The author's view in regard to the reduction of dislocations is one in which we fully agree. He says, "The success which has attended the employment of manipulation in effecting reduction of recent and also of old dislocations justifies the belief that their [mechanical appliances] application is not necessary in any form."

Part V. treats of the "*Ligation of Arteries*." It is abundantly illustrated, and contains very concise and comprehensive descriptions of the various procedures for performing these operations.

Part VI. describes "*Amputations*," in which the different operations suitable for the various regions are given. Hemorrhage and the means for its control receives due attention. The after-treatment in amputations, and upon which, in a great measure, depends success or failure, is quite full and explicit; but we have become so thoroughly convinced of the great advantages, both to surgeon and patient, by the employment of antiseptic dressings in this particular variety of surgical operations, that we regret Dr. Mears has not more emphatically insisted upon their employment in every case.

Part VII., the concluding section of the book, on "*Excisions of Bones and Joints*," is a most valuable addition to the present edition. The introduction of antiseptic dressings into surgery has gradually caused surgeons to regard excisions with much more favor than they formerly did, and their adoption in suitable cases has no doubt been the means of saving many useful limbs which would previously have been sacrificed.

In concluding our notice of the above work

we congratulate its author upon having very ably and satisfactorily performed his task, and we are confident that students, for whom the book has been more especially written, will receive valuable assistance from a study of its contents.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES, embracing the Entire Range of Scientific and Practical Medicine. By various writers. Illustrated by chromolithographs and fine wood engravings. Edited by Albert H. Buck, M.D., New York City. Volume i. New York: William Wood & Company, 56 and 58 Lafayette Place, 1885.

The enterprise or the spirit of excessive competition which now prevails among American publishers is yielding a most extraordinary crop of great books. Possibly the spirit which has been aroused by the laboriousness of Dr. Billings in the surgeon-general's office at Washington is becoming epidemic. The latest victim either of this contagiousness or of the publisher's zeal is Dr. Albert H. Buck, of New York City, if indeed his present attack ought not rather to be considered of the nature of a relapse than of an original affection. As the result we find upon our table the quarto volume which is to be followed, we are told, by six volumes like itself.

We have in the title of this volume a further instance of the misuse of the English language, which seems to have come upon us from the German. The work is called a Reference Handbook, when it is really a large and elaborate encyclopædia, containing in the whole of its volumes nearly six thousand double-columned pages of very close, small type.

The illustrations are very numerous. Most of those in the type are judiciously selected, and really add to the value of the work. The chromolithographs in the present volume are four in number. The first is a handsome plate of the *Arnica montana*, which we suppose has been added for æsthetic purposes. The second represents the blood spectra, and really has a scientific and practical value. The third, being representations of cerebral hemorrhage, we suppose owes its existence to the fondness which is believed to exist among so many Americans for bright red colors; whilst the fourth (types of carcinoma) is well calculated to strike awe, and thereby inspire respect in the hearts of the laity. The articles are written by a number of contributors, and seem to us uniformly good. Some of them are of very great merit. As an example we should mention the article by Dr. Henry upon blood. The chief value of this book to most

of us will be found in the information contained on matters concerning which knowledge is not easily accessible. As an instance of this we may cite the excellent *résumé* of the subject of Army Field Medical Organization, by Surgeon Charles Smart. We know of no book ordinarily to be found in a physician's library which contains so numerous, and usually so satisfactory, accounts of various watering-places and sanitary resorts, as does this one. Thus, in regard to Asheville, North Carolina, we find nearly three pages of condensed information. Concerning Biarritz we have two pages. Full information is given about all the health-resorts for which we have looked, except the Arkansas Hot Springs, and probably a description of this will be found in a future volume, under the head of "Hot Springs" of Arkansas. There is therefore much freshness about this volume, and we trust that it will make itself a home in American literature. We congratulate Dr. Buck upon the wisdom which he has displayed in selecting his contributors, and the success which he has thereby obtained.

THE PRACTICE OF PHARMACY. A Hand-book for Pharmacists and Physicians, and a Text-book for Students. By Joseph P. Remington, Ph.G. With nearly five hundred illustrations.

Philadelphia: J. B. Lippincott Company. London: 15 Russell Street, Covent Garden, 1885.

Professor Remington is a very well known man, whose great success as a teacher and as a pharmaceutical editor of the United States Dispensatory has given him a position second to no one in pharmacy in the United States, and, indeed, we may say, in the world. When, therefore, it was rumored that he was preparing a general work upon pharmacy, to fill the general vacancy left by the decrepit state into which Parrish's Pharmacy had fallen by old age, much was hoped for, and an examination of the volume before us indicates that the fruition has justified the hope. If there be any fault in the book, it is simply that of overfulness. The physician who writes his own prescriptions has very little need for a general treatise on pharmacy, but to him who lives in the country, and has the time and desire necessary for even the pretence of elegance in pharmacy, this work will prove invaluable. It is composed of nearly one thousand pages of clear type, with a free use of the smaller type. We note the fac-similes of prescriptions given on page 921 as being of such a nature that we thank Providence that it is not our lot to be an apothecary

and to decipher them. If the choice were allowed, we would prefer working out Egyptian hieroglyphics.

As the volume of Professor Remington is pharmaceutical rather than medical, it is hardly our province to review it in detail. It is sufficient to indicate to our readers that it embodies all that is known upon the subject of which it treats, and to recommend it most highly to any one desirous of possessing such a treatise. We congratulate Professor Remington upon the completion of his years of labor, and express the firm belief that he will reap the reward of a large and persistent sale.

REVUE SCIENTIFIQUE.

The following is a summary of the table of contents of the *Revue Scientifique* for the past month:

November 28, 1885:

Physiology.—Cerebral Excitability after Death. By M. Laborde.

History of the Sciences.—Van Helmont. By M. Laboulbène.

Miscellany.—Posthumous Memoirs of Pirogoff.

Aeronautics.—New Experiments with a Dirigible Aerostat. By M. Renard.

Book Notices.—History of the Heavens (by M. Ball); German Psychology (M. Ribot).

Proceedings of the Academy of Sciences of Paris.

Correspondence.

December 5, 1885:

The Death of M. Bouley.

Anthropology. Prehistoric Life. By M. Letourneau.

Terrestrial Physics. The Climate of Alsace. By M. Grad.

Psychology.—Manifestations of Intelligence in a Bird. By M. de Lacaze-Duthiers.

Physiology.—The Thermic Sense. By M. Herzen.

Book Notices.—Clinical Studies on Hysteria (Richer); The Pathogenic Microbes (M. Artigalas); Cholera and Ferran (M. Duhourcau); The Great Sympathetic in Disease (M. Long-Fox).

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

December 12, 1885:

Biology.—Acclimatization and Europeans in the Colonies. By M. Virchow.

Hygiene.—Hygienic Improvements in Paris. By M. Hericourt.

CORRESPONDENCE.

Geography.—The Exploration of Me-Kong. By M. Réveillére.

Astronomy.—The Fall of Stars on November 27, 1865. By M. Barré.

Book Notices.—The Equality of the Human Races. By M. Firmin.

Proceedings of the Academy of Sciences of Paris.

Correspondence.

December 19, 1885:

Chemistry.—Matter, Forces, and Affinity. By Armand Gautier.

Anthropology.—The Anthropological Congress at Carlsruhe.

Miscellany.—Public Instruction in Tunis. By M. Fontin.

Geology.—The Geysers in America and Iceland. By M. Leclercq.

Book Notices.—Lectures on the History of Medicine (M. Thomas); Railroad Transport of Wounded (M. Redard).

Proceedings of the Academy of Sciences of Paris.

Correspondence.

Correspondence.

BERLIN.

(From our Special Correspondent.)

THE USE OF THE COLD COMPRESS—INFANT FEEDING-BOTTLES—THE BACILLI OF SYPHILIS—GERMAN METHODS OF TEACHING MEDICINE—COMPULSORY VACCINATION—NOTES—TREATMENT OF ECZEMA.

Among the therapeutic measures in vogue in Germany there is none which attracts the attention of the American physicians so eminently as the water-compress. It is no fable that the "compress," as it is briefly called, is prescribed for every affection of the throat and lungs; for a clinical experience of nearly three months in the Charité and other hospitals convinced your correspondent that it is the first thing ordered in nearly every ailment of the respiratory tract. A piece of linen, being of the size of a napkin if intended for the throat, or of the size of a towel if intended for the lungs, is dipped into cold—not lukewarm—water, applied to the desired locality, and retained *in situ* by means of a woollen shawl or oil-silk, and renewed every half-hour. A poultice is never exhibited for these affections. The compress, as may be expected, has also become the routine treatment in every household, and is

quite familiar to every mother and nurse. Your correspondent has taken especial pains in tracing the therapeutic results of this procedure—which, of course, is often accompanied by medicinal treatment—and feels highly gratified with the results observed. The value of this hydriatic procedure consists in the frequent renewals and prolonged application—extending often over two to three days—of a medium which not only abstracts the surplus of heat in the part, and by its secondary physiological action dilates the vessels of the integument, and thus relieves the engorged internal parts, but which also has an undeniable invigorating influence on the nervous system. It seems superfluous to add that strict individualization is—as in all hydriatic procedures—an indispensable requisite in the application of the cold compress. If in a patient the nervous energy is profoundly lowered, the application of cold would naturally only deepen the existing prostration and lessen the resistance against the disease. If, however, we deal simply with a loss of innervation, the usual incumbent of nearly every affection, the application of cold would prove a powerful stimulant to the nerve-centres, and alongside of the above-mentioned local effects of the application, materially fortify the chances of recovery.

The old maxim that the treatment of an affection is in most instances an easy matter, provided a correct diagnosis has been established and the etiological factors are well understood, is strikingly illustrated by the digestive disorders of children that can be directly traced to the numerous existing patent nursing-bottles. In the children's department at the University Hospital of Berlin there is a collection of some three hundred nursing-bottles of various sizes and shapes, all provided with a long rubber tube, which enclose a piece of litmus-paper colored red. No commentary is needed. It is quite clear that the presence of lactic acid in the tube suffices to explain many obscure disorders of the alimentary tract for which the physicians are often at a loss to find a satisfactory explanation. Your correspondent has repeatedly witnessed that mothers returned to the Polyclinic and testified to the rapid recovery of their children after withdrawal of the patent nursing-bottles. In one instance the tube was found to be made of lead, and to have given rise to serious constitutional symptoms in addition to the gastric irritation. In view of these facts the attending physicians of the Polyclinic make it an invariable rule to inquire as to the nature of

the nursing-bottle in every child presented for treatment on account of digestive disorders.

In a lecture on bacteriology, held in the Hygienic Institute on the 9th of December, Prof. Koch denied that Lustgarten's syphilis-bacilli could at the present state of affairs be regarded as fully diagnostic and pathognomic, as the microbes detected in the smegma of the prepuce showed the same appearance and behavior as to coloration and general chemical tests. It is fair to add, however, Koch said, that Dutrelepont had recently endeavored to show that by a complicated coloration process the smegma-bacilli presented a definite difference of behavior from that of the syphilitic parasites detected in various parenchymatous tissues. But as long as Dutrelepont's claims lack a firm substantiation, Lustgarten's bacilli can, according to Koch's views, not yet be invested with an absolute diagnostic character. In the course of the same lecture Koch also referred to the singular and still unexplained identity of the bacilli of tuberculosis and leprosy.

There is an essential difference in the method of teaching the practice of medicine between Germany and America. All the lectures on practice of medicine are delivered in the hospital amphitheatres alongside of the patient, who serves as the illustration of the subject of the discourse. One student is called up by the professor to act as "practicant," to interrogate the patient, to diagnose the case, and to suggest the appropriate treatment. After that the professor delivers his lecture with especial reference to the peculiarities of the case present. It is evident that the impression produced by these practical and demonstrative lectures is far greater than that of mere didactic teaching, such as forms still the main source of instruction for many American students.

The question whether or not vaccination should be enforced as an obligatory measure is at present receiving in Germany an unusual attention. The appearance of an epidemic, marked by an erysipelatous rash and constitutional disturbance, on the island of Rügen (in the Baltic Sea), which is charged directly to vaccination, has naturally confirmed the claims of the opponents of this procedure, to abolish, at least, compulsion in the matter. While the fairness of this demand cannot be questioned, the German government is little disposed to comply with it in view of the remarkable results which vaccination has furnished in the army according to thoroughly reliable statistics. The following interesting

data on the value of vaccination, given by Prof. Koch in his opening lecture on hygiene, must be regarded as a powerful argument in favor of compulsory vaccination. Before the introduction of vaccination, Koch said, smallpox was a disease which, like measles at present, attacked nearly everybody and killed about one-twelfth of the human race. In Sweden, where we find reliable statistics even from the last century, according to the records eighty thousand people died annually of smallpox, while the number of deaths from this cause, after introduction of compulsory vaccination, amounts only to eight hundred to one thousand. In other words, seventy-nine thousand people are being saved annually in that country by vaccination. It would be a hard matter to overthrow so forcible an argument as is contained in these figures, provided they should be reliable. In the latest annual issue of the Imperial Health Office Reports, however, we find the following affections figuring as alleged sequelæ of vaccination, which might well deter a timid mater familias from exposing her child to the possible dangers lurking in vaccination:

1. Inflammation of the skin.
2. Inflammation of the lymphatic vessels and glands.
3. Inflammation and suppuration of the cellular tissue, five cases with a fatal issue.
4. Erysipelas, nine deaths.
5. Ulcerations and two deaths (from septicæmia).

6. Acute and chronic skin-eruptions.

A transmission of syphilis has in no instance been observed.

That learning and humanity do not necessarily go hand in hand has been very clearly shown by the practice and decisions of the military school at Spandau (near Berlin). To ascertain the penetrating power of a certain new shot, living horses, which were previously chloroformed, were fired upon. It is hard to recall, of all inhuman and brutal acts on record in the world's history, an act more revolting and disgraceful than this practice ordered by the Secretary of War of a nation claiming to be the most educated of all. From a medical point of view we fail to see what possible benefit in this especial instance chloroform could produce. Why not use cadavers, which would, in every imaginable respect, have answered the same purpose?

There is a still more ignominious issue connected with this affair. When Dr. Foerster, president of the Berlin Society for the Prevention of Cruelty to Animals, petitioned the

Secretary of War to inhibit this inhuman practice on the most noble and useful of animals, the wise and just secretary ordered Dr. Foerster to be indicted for gravely insulting the authorities of the military college. In spite of Dr. Foerster's plea that he was led to his petition by mere motives of humanity, he was sentenced to pay a fine of one hundred marks, which sum was afterwards reduced to thirty-five marks.

The catalogue of the Berlin University just issued contains among the number of attending students—over six thousand five hundred—the names of one hundred and twenty-five Americans who have duly matriculated. The chief attractions for the American student or physician (for they all have obtained their degree at home) are the clinics of Schröder and Gusserow in gynaecology, Bardeleben and Bergmann in surgery, Hensch in pædiatrics, and the laboratories of Koch and Virchow.

The concentration of the first authorities of Germany at the Berlin University has made Berlin unquestionably the greatest medical centre of the continent, a rank which a few years ago was claimed by Vienna. The American student is allowed to matriculate on the strength of his passport, without being compelled to present any college degree, while for every German the graduation-papers from a gymnasium—a classical high school, with a nine years' course—are a *conditio sine quâ non*. These requisites insure a uniform and high literary level, which differs very favorably from the mixed status still to be found in some of our American colleges. Though, according to American views, Latin and Greek are not indispensable requisites to the study and practice of medicine, we must admit that it is desirable to raise the standard of the profession at home to a higher level than it occupies at the present day. Of this one grows especially conscious after having met the English and German colleagues. There is no doubt, however, that probably in the near future the American physician will, in all respects, be the peer of his European *confrères*.

The pustulous eczema appearing on the head, face, and eyelids, which so often leads to irreparable injury to the conjunctiva and cornea, is treated by Burkhardt, in the Berlin Charité, in the following manner: After a careful softening of the part, and dissolving of the crusts, the part is brushed with a three per cent. solution of nitrate of silver. This application is made at first daily,

later only every second day, until healing sets in. Immediately after cauterization the application of the following ointment materially assists the healing process:

R Flor. zinci, 2 parts;
Olei cad., 1 part;
Vasel., 10 parts.

Burkhardt's treatment has proven a success in a very large number of cases.

A papilloma of the upper surface of the tongue, of the size of a three-cent piece, appearing in a young child, was treated by Dr. Schwecten, in the Charité, by the solid silver stick and immediate application of a saturated chloride of sodium solution. This simple procedure was so successful that the tumor disappeared wholly in about a week's time.

THE CHLOROFORM TREATMENT OF TAPEWORM.

Editors of the THERAPEUTIC GAZETTE:

I have the honor of being a subscriber and interested reader of your journal, and on pages 759 and 784 of No. 11, issued November 16, 1885, I read two articles on the use of chloroform in the treatment of tapeworm; the former, by Dr. Bennett, of Brooklyn, simply stating his success in the employment of the remedy, and the latter, by Dr. Sampson Pope, of South Carolina, claiming credit of the discovery for Dr. Simonds, of Texas.

While I do not for a moment doubt Dr. Pope's assertion, I simply wish space in your valuable journal to give due credit to another very worthy member of our noble profession.

To my knowledge, Dr. F. G. Horn, of Colorado Springs, Col., used chloroform in the treatment of tapeworm in 1872, and, meeting with decided success, he continues its use.

Very respectfully,
C. A. SIGLER, M.D.

EL DORADO, KANSAS.

NOTES ON COCAINE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I wish to add a mite to the records of cocaine hydrochlorate. Appreciating that the notes on cocaine have already become very voluminous, I will be as brief as possible, and beg your indulgence, on the ground that in a multiplicity of evidence must the merits of this local anæsthetic gain a lasting foothold. It to the ophthalmologist is a *sine quâ non*,—the anæsthetic *par excellence*. Among my most recent cases was a case of

strabismus convergens alternans. Young lady aged 23 years; operated upon both eyes at one sitting. Used in all 20 drops of eight per cent. solution, and waited half an hour from time of first instillation before commencing the operation. Used a drop or so about every five minutes. The operation was nearly bloodless and painless, and she scarcely felt the strabismus-hooks. Found also that the greatest point achieved, aside from the complete anæsthesia of the balls, was that the eyes could be immediately tried as to the power of convergence, and if any defects were observed the hooks could be again passed, and the remaining portions of tendinous attachments severed. This cannot be done where chloroform or ether is used, and maybe the surgeon's reputation greatly imperilled, and his fee withheld, and he so compromised that maybe the patient would not again submit to an operation. With cocaine all this is avoided. I have also found cocaine indispensable in tattooing corneal leucoma for cosmetic effects, and for the removal of foreign substances imbedded in the cornea. I have used it repeatedly, and have never been disappointed in its action.

Among the most important cases was one recently of acute glaucoma of left eye. Eye perfectly blind, painful, pupil dilated, and all the other usual symptoms. First instilled strong sol. eserine sulphuric; then at intermissions of some five minutes for half an hour instilled a drop of an eight per cent. solution of cocaine hydrochlorate, and proceeded with the iridectomy, which proved nearly painless, and the eye made a complete and rapid recovery, s=38.

Used cocaine again in the removal of a very large pterygium complicated with symblepharon and dense corneal opacity. The operation was nearly bloodless and painless, and after the dissection the surface was cleansed carefully and dried, and cocaine again applied, and the ocular conjunctiva dissected up from near two-thirds from above and below, and the exposed surface covered. The sutures held nicely, and the eye has made a handsome recovery, with scarcely any reaction after the operation.

Operated one week ago to-day upon the eyes of a young girl aged 13 years. Case of acute glaucoma, both eyes, caused from congenital ectopia lentis, both eyes. Right dislocated downwards and inwards, and left lens into anterior chambers. In this case used chloroform by inhalation, and also cocaine locally, and eserine. Cocaine was used for a

double purpose,—first, to prevent vomiting from any relaxation, and also that in case the chloroform-anæsthesia should chance to fail at the critical moment we could go on and finish the operation without pain to the patient; and such an emergency did partially happen when we came to the operation upon the left eye; but the cocaine did its work, and we had as much time as could be desired. In the right eye we have a handsome iridectomy, and the eye healed quickly, and without any reaction; and sight is good, as the lens was clear; but in the left eye the lens was tough and amber-colored, and bound down tightly by adhesions to the iris, which (the latter) was found to be a hard sclerosed ring; and we could not remove the lens, but proceeded by division, and bound up the eye, and expected rapid setting in of post-ophthalmitis; but nothing much unusual has happened; and while in this eye we do not expect any sight, yet we will have a fair-looking eye. The notes on this case as here given are very incomplete, and we wish to report it very fully in some ophthalmic journal, for it has proved one of rare interest to all interested.

C. A. LAMBERT, M.D.

GOSHEN, IND., December 15, 1885.

Notes and Queries.

DISINFECTANTS.

The following are the conclusions drawn from the reports of the Committee on Disinfectants of the American Public Health Association:

The most useful agents for the destruction of spore-containing infectious materials are:

1. Fire. Complete destruction by burning.
2. Steam under pressure. 110° C. (230° F.) for ten minutes.
3. Boiling in water for one hour.*
4. Chloride of lime.† A four per cent. solution.
5. Mercuric chloride. A solution of 1 to 500.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms not containing spores, the Committee recommended:

* This temperature does not destroy the spores of *B. subtilis* in the time mentioned, but is effective for the destruction of the spores of the anthrax bacillus and of all known pathogenic organisms.

† Should contain at least twenty-five per cent. of available chlorine.

1. Fire. Complete destruction by burning.
2. Boiling in water half an hour.
3. Dry heat. 110° C. (230° F.) for two hours.
4. Chloride of lime.* One to four per cent. solution.
5. Solution of chlorinated soda.† Five to twenty per cent. solution.
6. Mercuric chloride. A solution of 1 to 1000 to 1 to 4000.
7. Sulphur dioxide. Exposure for twelve hours to an atmosphere containing at least four volumes per cent. of this gas, preferably in presence of moisture.‡
8. Carbolic acid. Two to five per cent. solution.
9. Sulphate of copper. Two to five per cent. solution.
10. Chloride of zinc. Four to ten per cent. solution.

The Committee would make the following recommendations with reference to the practical application of these agents for disinfecting purposes :

For Excreta.

(a) In the sick-room :

For spore-containing material :

1. Chloride of lime in solution, four per cent.
 2. Mercuric chloride in solution, 1 to 500.§
- In the absence of spores :
3. Carbolic acid in solution, five per cent.
 4. Sulphate of copper in solution, five per cent.
 5. Chloride of zinc in solution, ten per cent.

(b) In privy-vaults :

Mercuric chloride in solution, 1 to 500.¶

(c) For the disinfection and deodorization of the surface of masses of organic material in privy vaults, etc. :

* Should contain at least three per cent. of available chlorine.

† This will require the combustion of between three and four pounds of sulphur for every thousand cubic feet of air-space.

‡ The addition of an equal quantity of potassium permanganate as a deodorant, and to give color to the solution, is to be recommended (*Standard Solution No. 2*).

§ A concentrated solution containing four ounces of mercuric chloride and one pound of cupric sulphate to the gallon of water is recommended as *Standard Solution No. 3*. Eight ounces of this solution to the gallon of water will give a dilute solution for the disinfection of excreta, containing about 1 to 500 of mercuric chloride, and 1 to 125 of cupric sulphate.

¶ For this purpose the chloride of lime may be diluted with plaster of Paris, or with clean, well-dried sand, in the proportion of one part to nine.

Chloride of lime in powder.‡

For Clothing, Bedding, etc.

(a) Soiled underclothing, bed-linen, etc. :

1. Destruction by fire, if of little value.
2. Boiling for at least half an hour.
3. Immersion in a solution of mercuric chloride of the strength of 1 to 2000 for four hours.§

4. Immersion in a two per cent. solution of carbolic acid for four hours.

(b) Outer garments of wool or silk, and similar articles, which would be injured by immersion in boiling water or in a disinfecting solution :

1. Exposure to dry heat at a temperature of 110° C. (230° F.) for two hours.

2. Fumigation with sulphurous acid gas for at least twelve hours, the clothing being freely exposed, and the gas present in the disinfection-chamber in the proportion of four volumes per cent.

(c) Mattresses and blankets soiled by the discharges of the sick :

1. Destruction by fire.
2. Exposure to superheated steam—twenty-five pounds pressure—for one hour. (Mattresses to have the cover removed or freely opened.)
3. Immersion in boiling water for one hour.
4. Immersion in the blue solution (mercuric chloride and sulphate of copper), two fluid-ounces to the gallon of water.¶

*For Furniture and Articles of Wood, Leather, and Porcelain.***

Washing, several times repeated, with,—

1. Solution of mercuric chloride, 1 to 1000. (The blue solution, four ounces to the gallon of water, may be used.)
2. Solution of chloride of lime, one per cent.
3. Solution of carbolic acid, two per cent.

For the Person.

The hands and general surface of the body of attendants, of the sick, and of convalescents at the time of their discharge from hospital :

1. Solution of chlorinated soda diluted with nine parts of water (1 to 10).
2. Carbolic acid, two per cent. solution
3. Mercuric chloride, 1 to 1000 ; recommended only for the hands, or for washing

¶ The blue solution containing sulphate of copper, diluted by adding two ounces of the concentrated solution to a gallon of water, may be used for this purpose.

** For articles of metal, use Solution No. 3.

away infectious material from a limited area, not as a bath for the entire surface of the body.

For the Dead.

Envelop the body in a sheet thoroughly saturated with,—

1. Chloride of lime in solution, four per cent.
2. Mercuric chloride in solution, 1 to 500.
3. Carbolic acid in solution, five per cent.

For the Sick-Room and Hospital Wards.

(a) While occupied, wash all surfaces with,—

1. Mercuric chloride in solution, 1 to 1000 (the blue solution containing sulphate of copper may be used).
2. Chloride of lime in solution, one per cent.
3. Carbolic acid in solution, two per cent.

(b) When vacated :

Fumigate with sulphur dioxide for twelve hours, burning three pounds of sulphur for every thousand cubic feet of air-space in the room ; then wash all surfaces with one of the above-mentioned disinfecting solutions, and afterwards with soap and hot water ; finally throw open doors and windows and ventilate freely.

*For Merchandise and the Mails.**

The disinfection of merchandise and of the mails will only be required under exceptional circumstances ; free aeration will usually be sufficient. If disinfection seems necessary, fumigation with sulphur dioxide, as recommended for woollen clothing, etc., will be the only practicable method of accomplishing it.

For Rags.

(a) Rags which have been used for wiping away infectious discharges should at once be burned.

(b) Rags collected for paper-makers during the prevalence of an epidemic should be disinfected before they are compressed in bales by,—

1. Exposure to superheated steam (twenty-five pounds pressure) for ten minutes.
2. Immersion in boiling water for half an hour.

(c) Rags in bales can only be disinfected by injecting superheated steam (fifty pounds pressure) into the interior of the bale. The apparatus used must insure the penetration of the steam to every portion of the bale.

* In order to secure penetration of the envelope by the sulphur dioxide, all mail matter should be perforated by a cutting-stamp before fumigating.

For Ships.

(a) Infected ships at sea should be washed in every accessible place, and especially the localities occupied by the sick, with,—

1. Solution of mercuric chloride, 1 to 100 (the blue solution heretofore recommended may be used).
2. Solution of chloride of lime, one per cent.
3. Solution of carbolic acid, two per cent.

The bilge should be disinfected by the liberal use of a strong solution of mercuric chloride (the concentrated solution—"blue solution"—of this salt with cupric sulphate may be used).

(b) Upon arrival at a quarantine station an infected ship should at once be fumigated with sulphurous acid gas, using three pounds of sulphur to every thousand cubic feet of air-space; the cargo should then be discharged on lighters ; a liberal supply of the concentrated solution of mercuric chloride (four ounces to the gallon) should be thrown into the bilge, and at the end of twenty-four hours the bilge-water should be pumped out and replaced with pure sea-water ; this should be repeated. A second fumigation after the removal of the cargo is to be recommended ; all accessible surfaces should be washed with one of the disinfecting solutions heretofore recommended, and subsequently with soap and hot water.

INJECTION OF A NEW PREPARATION OF ALBUMINATE OF MERCURY IN SYPHILIS.

DR. MAX BOCKHART, of Wiesbaden, describes, in a German dermatological journal, an ingenious method of administering mercury in syphilitic cases by subcutaneous injection, which, he says, is perfectly innocuous, never having caused pain, induration, or abscess. He combines the mercury with blood-serum. The latter, which may be obtained from the horse, sheep, or ox, is sterilized according to Koch's process, and then filtered. Of the filtrate, 40 cubic centimetres (1½ oz.) is poured into a graduated glass. To this is added a warm (50° Cent.) solution of 3 grm. (45 grs.) of bichloride of mercury in 30 grammes (1 oz.) of water. The resulting precipitate is dissolved in a solution of 7 grm. (105 grs.) of common salt in 20 grammes (5 drachms) of water. This gives a three per cent. solution of mercury blood-serum. This is then mixed with distilled water, so that the whole weighs 200 grammes (6½ oz.), which

reduces the strength to one and a half per cent., which is the best strength for use; a gramme (15 grs.) of it containing 0.015 gramme ($\frac{1}{8}$ gr.) of mercurial albuminate. This solution is a yellowish opalescent liquid, with neutral reaction, and will keep very well in a dark glass bottle in a cool place. The injections are given once or twice a day, 0.7 gramme (12 gtt.) being introduced on each occasion, containing about 0.01 gramme, or $\frac{3}{8}$ of a grain of albuminate of mercury. Besides acting rapidly and powerfully on syphilis, and keeping the system for a long period free from secondary symptoms, this preparation has the advantage of being stable, cheap, and easily prepared.—*British Med. Journ.*, October 10, 1885.

COCAINE IN SEA-SICKNESS.

DR. J. B. BISSELL writes to the *Medical Record*, December 19, 1885, as follows: "Cocaine has been recently recommended as a remedy in sea-sickness, particularly by a Russian physician, who claims to obtain speedy and certain relief by its use in this affection. In a voyage from New York to Charleston, S. C., made in November of this year, an excellent opportunity was afforded to ascertain the value of the drug in this regard. The time of passage was four days, the weather fair, and no storms, but a head-wind lasted all the way. The experiments were made on twenty-seven persons of both sexes, and from 4 years of age to 48. The hydrochlorate of cocaine, in doses of $\frac{1}{16}$ and $\frac{1}{8}$ of a grain, in tablets, was given by mouth. In one set of cases the medicine was begun soon after leaving the wharf; in another set at the first symptom of nausea; in the third set not till vomiting had taken place. In the first set the dose was $\frac{1}{16}$ of a grain, repeated every hour till 2 grains had been taken. In the other cases $\frac{1}{8}$ every fifteen minutes up to 2 grains, or, as happened in nearly every case, till the patients became so sick that they refused to continue the drug. This was usually after the fifth or sixth dose. The results from these three sets of cases were almost precisely similar. In twelve cases there was no improvement, if the treatment did not positively make the patients worse. In six cases there was certainly an increase in the severity of the symptoms. In only three of the twenty-seven cases was there apparent benefit, and this improvement was coincident with a temporary improvement of the weather. As the sea became rougher all three relapsed, and, in spite of the

cocaine, became very sick. The other six of the twenty-seven were at sea for the first time. One of these was not sick at all during the trip. The others, however, did not escape. I did not notice any special influence exerted by the age or sex of the person treated. Such results as the above ought to dispose of cocaine as a remedy in sea-sickness, but as these results do not advertise any one's special method of administering the drug, or any firm's special preparation, it is very likely it will continue to be used till a newer remedy comes into fashion."

ON THE INFLUENCE OF VASELINE ON DIGESTION.

Vaseline is at present so frequently employed for pastry and other eatables instead of butter and fat, that the question whether or not this substance exerts an objectionable influence on the digestive system is worthy of attention.

In the meeting of the Biological Society of Paris, held on the 14th of November, 1885, DR. DUBOIS discussed this subject, and presented the results of his researches (vide *Gazette Hebdomadaire* of November 27, 1885).

The most instructive of his experiments instituted for this purpose were those of two dogs, who ingested for a period of six consecutive days 25 and 15 grm. (375 and 275 grs.) daily without experiencing any appreciable disturbance of the digestive apparatus. These quantities correspond to about 100 to 60 grm. in man, taking weight as the criterion. Dubois states that, against all anticipation, vaseline is not ill borne by the stomach; although, as a carbohydrate, it would be *a priori* regarded as an impediment to the digestive functions.

THE GELSEMIUM HABIT.

DR. H. C. CALDWELL reports in the *Med. and Surg. Herald*, October, 1885, the peculiar case of a man who became addicted to the use of gelsemium. In an attack of rheumatism he took large doses of the fluid extract of gelsemium, which was followed by relief, and the next day was repeated under similar circumstances with the same result. Using it for some time in this way he became addicted to the habit, and finally used as much as a fluidounce of the extract at one dose. He became pale, emaciated, restless, and uneasy, and was a subject of hallucination. This

condition continued to increase until he became finally almost idiotic, and the dose being daily increased, until after a year he sank into a condition of hopeless idiocy, and died in a stupor induced by this drug.

COLD BANDAGING OF THE LEG IN INSOMNIA.

DR. VON GELLHORN has found the following plan very useful in inducing sleep in persons who suffer from insomnia. A piece of calico, about eighteen inches wide and two and three-quarter yards long, is rolled up like a bandage, and a third of it wrung out of cold water. The leg is then bandaged with this, the wet portions being carefully covered by several layers of the dry part, as well as by a layer of gutta-percha tissue, and a stocking drawn on over the whole. This causes dilatation of the vessels of the leg, thus diminishing the blood in the head and producing sleep. It has been found by Winternitz that the temperature in the external auditory meatus begins to fall a quarter of an hour after the application of the bandage; the decrease amounting to 0.4° Cent., and the normal not being again reached for from one and a half to two hours afterwards. The author has employed this means of procuring sleep for a couple of years, and finds it especially useful in cases where there is congestion of the cerebral vessels. Sometimes he has found it necessary to reapply the bandage every three or four hours, as it dried.—*British Med. Journ.*, November 7, 1885.

THE INCOMPATIBILITY OF ANTIPYRIN WITH SWEET SPIRITS OF NITRE.

We have already referred, in a previous issue, to the fact that when antipyrin in aqueous solution is added to sweet spirits of nitre a deep green color is gradually assumed, and after standing several hours beautiful green crystals are deposited. This reaction has been investigated by MR. JAMES KENNEDY (*Pharm. Record*, December 15, 1885), who found that when antipyrin was dissolved in ethyl nitrite or amyl nitrite the solution always deposited it in crystalline form on standing for some hours. When antipyrin is mixed with a solution of potassium nitrite the solution immediately assumes a green color, but does not deposit the green crystals.

After making some further experiments, he concluded that the formation of the new compound was due to the combination of the acid or nitrous radical with antipyrin, and proved

the correctness of his theory by obtaining the compound from aqueous solution of antipyrin by saturating it with (N_2O_5) or (NO) gas (generated by action of HNO_3 on Cu), the compound being but very sparingly soluble in water crystallized out.

It crystallizes in minute tabular crystals having a beautiful green color.

It is an acid, and has the property of reddening litmus-paper, and combines with alkalis, but is precipitated from its combination on addition of HCl.

It is sparingly soluble in cold water, but is entirely dissolved by boiling water (being again deposited on cooling).

It is soluble in ether, alcohol, and benzol, but is insoluble in chloroform.

He also mentions another peculiar compound which it is capable of forming:

When antipyrin is treated with Nessler's reagent in excess the mixture become turbid, and in a few moments separates into two distinct layers. The lower layer is of a pale yellow color and has an oily appearance, and is a compound of antipyrin with iodide of mercury. It is decomposed by addition of water in excess with separation of yellow or proto-iodide of mercury.

Antipyrin is a very soluble substance, dissolving readily in all ordinary solvents. Its aqueous solution is not precipitated by the hydroxides of potassium, sodium, or ammonium, but gives precipitates with mercuric chloride, tannic acid, and iodine. It is *not* precipitated by soluble iodides. When gently heated it melts to a colorless liquid, and solidifies to a crystalline mass on cooling. Exposed to higher heat it sublimes with partial decomposition. The vapors are inflammable.

THE ACTION OF ALKALIES ON ALOES.

It is well known that the addition of bicarbonate of sodium or potassium to solutions of aloes considerably diminishes their bitterness, and DR. MACDONALD (*Moniteur de la Pharmacie*, November, 1885) has attempted to determine whether or not this addition to aloes at the same time diminishes their medicinal properties. A proportion of forty parts of aloes, seventy-five of bicarbonate of sodium, to a thousand of water, was divided into two parts; the one was carefully sealed, the other remained exposed to the air. Two months later the latter portion had entirely lost its bitterness, while in the first it was completely preserved. Therapeutic experiments made with these two proportions show that both

had still very active properties, but that the bitter solution was at least three times as active as the other.

CASE OF POISONING BY NITRATE OF POTASSIUM.

In the course of an exceedingly interesting article, DR. LITTLEJOHN gives an account of a fatal case of poisoning with nitrate of potassium, supposed to be the only recorded case of criminal administration of nitre (*Pharmaceutical Journal and Transactions*, November 21, 1885).

The victim was a boy of 3, the son of a single woman. The boy was robust, and when he left the house with his mother at 5.35 on a Friday afternoon he was in his usual good health. When he returned at six o'clock he was cold, sick, and vomiting. Afterwards he vomited repeatedly and was violently purged. The mother refused to call medical assistance, and the boy died at 8 P.M. Dr. Littlejohn having been asked for a medical certificate, the inquiries which he made raised his suspicions, and he thought it right to inform the police authorities of the case. A post-mortem examination was accordingly ordered, and on examining the stomach Dr. Littlejohn's suspicions were confirmed. He says, "I shall never forget the striking appearance of vivid congestion which it presented as contrasted with the generally normal condition of the rest of the body."

An order for analysis was intrusted to Prof. Maclagan and Dr. Littlejohn. Search was made for the metallic irritant poisons, but without success; neither arsenic, mercury, zinc, nor oxalic acid was present. Subsequently Dr. Littlejohn learnt that on the toe of one of the child's boots there was the appearance of some minute crystals. On examination with a lens these proved to be prismatic and fluted, and Prof. Maclagan pronounced them to be nitre. The brucine test was applied, and the characteristic vivid red reaction obtained. "No time was lost in completing the analysis, and as the result nitre was detected in the mucous lining, the stomach, and the intestines, in the liver, lung, kidney, brain, and in the blood. From the stomach it was separated in the crystalline form; in the other organs the reactions with brucine and iron were well marked. In the brain and blood the iron test was not decisive, but the brucine test showed the presence of nitre very distinctly."

The poison was also found on various articles of clothing worn by the child before death.

The mother had cleared away all discharges which passed from it, but on two pieces of cloth which were stained with faecal matter nitre was found. Prof. Maclagan and Dr. Littlejohn reported "that from our whole experiments we can come to no other conclusion than that this child must have swallowed a very large dose of nitre, which had not only impregnated the blood and all the organs, but had been discharged in considerable quantity in the matters vomited and passed by stool."

As to the purchase of the poison, a grocer stated that he recollected selling the woman a small packet of nitre, but he failed to identify her in a proper manner. Other important links in the chain of evidence being wanting, the jury returned a verdict of "not proven."

In concluding the paper Dr. Littlejohn remarks, "The taste and rapidity of its action are naturally serious obstacles to the use of nitre by the poisoner, and, as the present case shows, children are the most likely victims. The wonder is that with the unusual facilities for the purchase of such an active poison we do not hear of nitre being more frequently employed."

ARTIFICIAL COCAINE.

MERK succeeded in transforming benzoyl-ecgonin, a new substance discovered by him, into cocaine, as reported by the *Pharm. Zeitung* of October 31, 1885. It might interest some of the more speculative minds to know how to prepare the costly alkaloid without the Peruvian plant.

Several grammes of benzoyl-ecgonin are heated to 100° (C.) with iodide of methyl and methylic alcohol, and then slowly evaporated. The product is a hydrate of iodine, and conforms to all tests of genuine cocaine, and even has the same melting-point as the latter (98°).

AN IMPROVED METHOD OF OPERATING FOR CLEFT PALATE.

A correspondent writes to *The Lancet*, November 7, 1885, concerning what he considers a great improvement in the operation for cleft palate. Hitherto great difficulty and not a little danger have arisen from hemorrhage during the operation, necessitating frequent and very skilful assistance, periodical discontinuation of the anæsthetic, and distinct intervals in the performance of the operation. In addition to these, other and minor troubles are experienced. All these difficulties may be avoided, and the operation rendered perfectly

safe and easy, by the simple process of inversion as applied to the head only. This can easily be attained by bringing the patient's shoulders well up to the end of the operating-table, and allowing the head to hang over the edge in the fully extended position. In this position the roof of the mouth would be horizontal or slightly inclined downward towards the operator, who should stand at the head of his patient. The anæsthetic is given through the nose by a small tube, and is quite out of the way of the surgeon. Only one assistant is required, who should stand to the left of the operator. In paring the edges no change of hands is required, but the corresponding hand should be used in elevating the tissues of the hard palate and in passing the sutures. Under these circumstances no blood can enter the larynx or œsophagus, the palate remains unobscured by blood, and whatever hemorrhage occurs finds its way into the nasal cavities, and at the conclusion of the operation may be emptied by simply turning the patient's head to one side.—*Medical Record*, December 5, 1885.

THE TREATMENT OF DIABETES MELLITUS WITH BORACIC ACID.

MR. F. A. MONCKTON reports in the *Australasian Gazette* (October, 1885) a case of a boy, aged 14, suffering from diabetes mellitus, with all the symptoms in an aggravated form, who was apparently cured by the use of boracic acid in 7-grain doses three times daily. At first there were no stringent dietary regulations, and even in the later part of the treatment only sugar, potatoes, and oatmeal were forbidden. Bread was eaten at the meals in the ordinary way. He gradually gained in weight, his health improved, and the sugar disappeared from the urine.

TREATMENT OF A REBELLIOUS CORN.

DR. R. C. NEWTON, Assistant Surgeon, U.S.A., writes to the *New York Medical Record*, November 7, 1885, from Fort Elliott, Texas, concerning a soldier, 33 years of age, who was suffering from a large callosity, caused by a splinter which he had run into the sole of his foot two years ago. The callosity resembled an ordinary corn, but was as large around as a quarter of a dollar, and gave but little pain except when the man walked about. The corn was vigorously treated by excision, poulticing, scraping, salicylic acid, cannabis indica, collodium, etc.,

but without avail, for each time that it was removed it grew again with most commendable persistency. Anti-syphilitic treatment was also tried without success. Finally Dr. Newton had resort to liquor potassæ, as recommended by Erichsen for callosities, and, after making applications twice a day with this substance for a period of four months, was rewarded by seeing his patient cured and returned to duty.

THE EMPLOYMENT OF ANTIPYRIN IN THE TREATMENT OF EPISTAXIS.

DR. LAVRAND (*Journ. de Méd.*, November, 1885) refers to two cases which seem to show that antipyrin possesses the power of arresting epistaxis. Dr. Lavrand used it in the form of a three per cent. solution. It is employed by soaking a morsel of cotton in this solution, and then introducing it into the nostril, which is then closed by making pressure with the finger over the compress.

THE TREATMENT OF BURNS.

DR. MEURISSE speaks very highly of goldbeaters' skin as an application to burns (*Medical Record*, December 5, 1885). He says that it never becomes adherent to the skin as other forms of dressing do, the pain and inflammation are much less marked, and the wounds heal much more rapidly. The goldbeaters' skin may be washed with cold water at each dressing, and can be used again and again. The liniment or other applications may be made directly to the skin and covered with the tissue. The same substance may be used in dressing blisters after the application of a vesicatory.

THE TREATMENT OF RHUS TOXICODENDRON POISONING.

DR. SILAS HUBBARD reports in the *Peoria Monthly* for November that he has often obtained good results in the treatment of rhus toxicodendron poisoning by the application of a strong infusion of stramonium-leaves.

OPIUM-POISONING THROUGH MOTHER'S MILK.

MR. WILLIAM T. EVANS reports in the *British Med. Jour.*, December 19, 1885, a case of a newly-born nursing infant which was fatally poisoned by opium given to the mother for after-pains.

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Original Communications.

THE OIL OF GAULTHERIA.

By Drs. H. C. Wood and Hobart A. Hare.

THE use which has been made of the oil of gaultheria in rheumatism has been apparently attended with so much advantage that we have been led to make a study of its action upon the animal organism, directing our attention, first, to the symptoms which it produces when given in large quantities by the stomach; then to its effects upon the respiration and circulation; and, finally, its fate within the organism, and its relations with salicylic acid.

When a large dose (one to two fluidounces) of the oil of wintergreen is given to a good-sized dog by the mouth there appear at once great restlessness and discomfort, and an evident nausea, and finally vomiting. There is evident pain in the belly, the walls of which are retracted and hard, a constant desire for water, which keeps the animal standing with its head over a bucket of water, out of which he occasionally attempts to take a sip, which is no sooner done than his discomfort seems to be increased, probably because of the burning sensation produced by the cold water coming in contact with the volatile oil.

Following this there is impairment of power, chiefly in the hind legs, the movements in these members being incoördinated and

clumsy. The animal now lies down, and then, seemingly propelled by an excessive thirst, rises with difficulty and goes to the water, of which he takes no more than he did before. All the symptoms show the presence of acute gastritis.

In one experiment the oil was given at 2.10 P.M.; the vomiting occurred at 2.30, but the matters vomited did not possess as strong an odor of the drug as might have been expected.

At 3.40 P.M. general violent convulsions came on, lasting some minutes, and ending in the dog lying on his side and going through a series of running movements. At 3.45 the breathing was 122 per minute and very labored.

At 4 P.M. the dog got up and walked to the bucket, and stood over it, but in an instant lay down without drinking. He was pushed with the foot to make him get up, struggled a moment, then went into violent general convulsions as before, followed by running movements. The convulsions seemed to be spinal in origin, without unconsciousness. At 5 o'clock the dog died in wild convulsions, having had almost continuous convulsions for over half an hour.

When small doses (16 m. or 1 c.c.) of the oil are injected into the jugular vein of a dog they seem to produce little if any effect, either in the respiratory or cardiac movements. There is no change of any consequence in the pulse-rate or arterial pressure, and unless the dose be given very rapidly or in larger amount the respiratory conditions remain almost unchanged. If the amount of the drug injected be now increased to 2 c.c. or 3 c.c. (30 to 50 m.), the effects are more marked.

No sooner has the drug been fairly injected into the jugular vein than the dog becomes restless and his respirations fuller and more rapid, while the arterial pressure is slightly decreased. The pulse-rate is, however, slightly increased. This condition lasts for three or four seconds, and is followed by a return to almost normal on the part of the respiration, while the arterial pressure is greatly increased over its normal height before the injection.

The return to normal is, however, only of a few seconds' duration; the rapid respiratory movements and the decrease in pressure and increase in pulse-rate return, to last for a slightly longer or shorter time, as the case may be.

In the normal dog the injection of thirty to fifty minims of the oil of gaultheria produces, therefore, a series of cycles, in which there is a marked increase of respiration and decrease of arterial pressure, passing gradu-

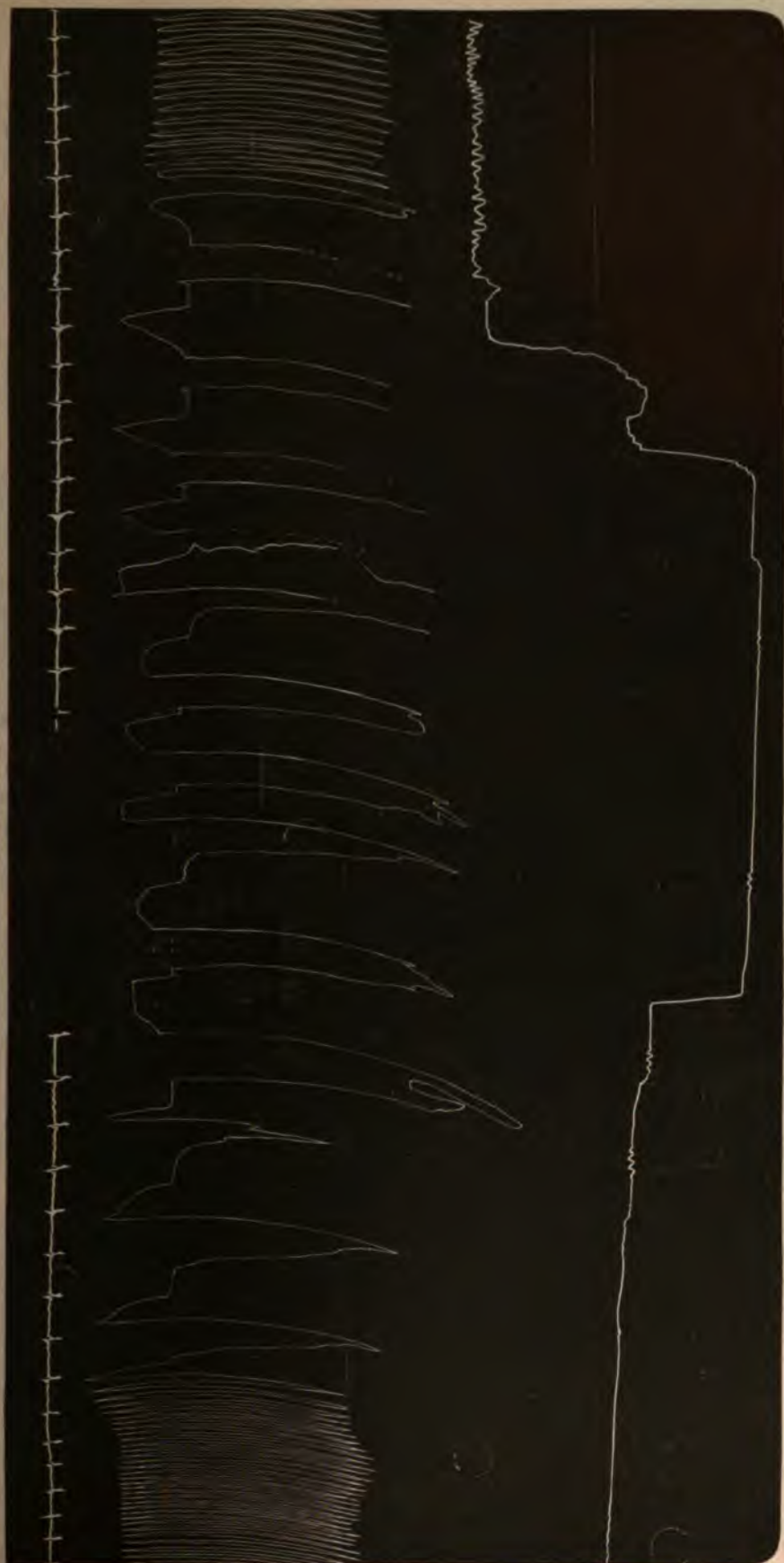
ally into normal respiration and normal arterial pressure, to be succeeded after a time by a new cycle of change. In order to determine whether the respiratory phenomena were the result of some action on the peripheral fibres of the pneumogastric or were due to a centric influence, we experimented upon dogs in which the vagi had been cut previous to the injection of the oil. Under these circumstances it was found that the alterations of respiratory rhythm are much more pronounced than in the uninjured animal. The change from the very slow distant respiration of divided vagi was colossal. At the height of the paroxysm the respiratory rate, which before the giving of the oil had been 4 per minute, rose to 288 per minute. After the rapid respiration, during the period of slow breathing, the respiratory rate fell to 12.

The respirations during the period of rapidity seemed to be almost as full and deep as at any time. The cycle of respiratory change from the beginning of one paroxysm of rapid breathing to the beginning of the next varied considerably in length. Sometimes it occupied one minute, in other instances several minutes. Towards the last of the experiment the respirations gradually became more and more slow, but persisted for about one minute after the cessation of the heart's action. These experiments seem to prove that the oil of gaultheria acts directly upon the respiratory centres as a very powerful but peculiar stimulant.

It will be seen that the phenomena resembled somewhat those of the so-called Cheyne-Stokes respiration,—a form of breathing concerning the philosophy of which there are many theories, none of which to our thinking are thoroughly satisfactory. It is well known that when the spinal cord is under the influence of strychnine, alternate periods of furious convulsive discharges of nerve force from the spinal cells alternate with periods in which the relaxation is so extreme that we can well believe the tone of the muscles is below the normal. A possible explanation of the respiratory phenomena of gaultheria-poisoning is, that the condition of the respiratory centres is similar to that of the spinal cord under the influence of strychnine, and that the rapid breathings represent a respiratory convulsion, the slow breathing respiratory relaxation, and that the drug must be considered a respiratory stimulant.

The respiratory influence of this drug is so great that it probably dominates the action upon the circulation, and we therefore made

TRACING No. 1.



experiments upon curarized dogs to determine the influence of the oil of gaultheria upon the circulation, when by artificial means the respiratory function is uniformly maintained. If, under these circumstances, the oil of gaultheria be injected into the jugular vein in doses of thirty to fifty minims, there is an immediate and very decided fall of the arterial pressure, which lasts for thirty or forty seconds, when it is followed by a rapid rise, which continues until the pressure is much beyond its original condition. There seems to be now no rhythm of arterial pressure like that which occurs in the normal dog after the injection of the oil, and we therefore must conclude that the phenomena which we have noted in the normal dog are chiefly secondary to the disturbances of respiration.

These changes of pressure may be found in the following experiment, which we have confirmed by repetition.

Experiment 1.—Weight of dog, 30 pounds; small doses of gaultheria; dog curarized; pneumogastrics entire.

Time.	Drug.	Press.	Pulse.	Remarks.
3.20.50	Oil 1.5 c.c.	90-80	138	
3.22	60	210	
3.24	70	186	
3.25	88	150	
3.27	120-130	180	
3.29	140	198	
3.31	140	198	
3.33	160-164	156	Art. resp. appar. broke down.
3.35	220-260	54	

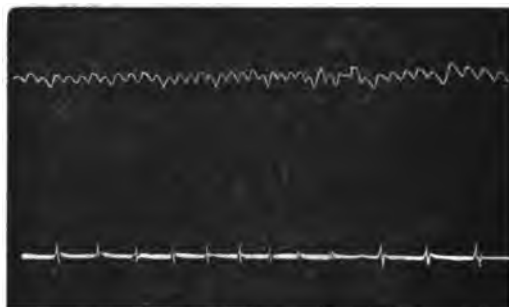
In order to determine the cause of the fall of the arterial pressure in the first part of these experiments, and the subsequent rise of pressure, we cut the spinal cord in the upper cervical region of a powerful dog, maintained artificial respiration, and then injected the gaultheria. The result is expressed in the following experiment.

Experiment 2.—December 26, 1885; very large dog; weight, 32 pounds.

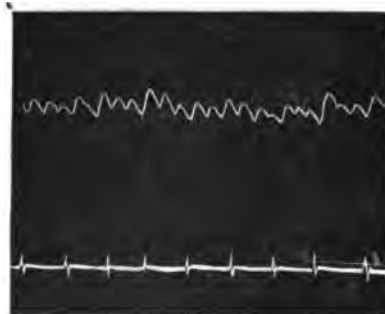
Time.	Drug.	Press.	Pulse.	Remarks.
3.30	.....	.....	.....	Cut cord in upper cervical region; artificial respiration.
3.37.50	.....	46	198	
3.38	3 c.c. oil	46-50	192	
3.38.20	.....	.....	.....	Injection ended.
3.38.40	.....	44-50	162	
3.39	.....	40	204	
3.39.05	3 c.c. oil	40	186	
3.42	.....	26	.....	No pulse; dog dead.

This experiment shows that the fall of the arterial pressure in the beginning of the first

experiment, as well as the subsequent rise of pressure, were produced by an action in the vaso-motor centres, since neither of them occurred in Experiment 2, although the amount of the oil of gaultheria per pound of dog was about twice as much as in the previous one. In other words, before paralysis of the vaso-motor centre 1.5 c.c. of the oil of gaultheria caused a great fall and rise of the arterial pressure, whilst after paralysis of the vaso-motor centre 3 c.c. had very little effect. In order to show the little effect which the first 3 c.c. of the oil of gaultheria had, after section of the cord, the following tracings, showing the actual heights before and after the injection, are given.



TRACING NO. 2. Before injection.



TRACING NO. 3. After injection.

The large size of the pulse-wave on Tracing No. 3 shows how little effect the 3 c.c. of oil of gaultheria had had upon the cardiac force.

We have already shown the powerful stimulating influence which this drug has upon the respiratory centres, and the later experiments which we have just discussed show that it is also a powerful vaso-motor stimulant.

The characters of the convulsions in the dogs poisoned with it (given by the mouth) indicate that they are spinal. We have not positively proven this, but it appears as though the spinal cord was also stimulated by the oil.

The dogs poisoned by the mouth died largely on account of the local effects of the drug upon the gastro-intestinal mucous mem-

brane and of its influence upon the nerve-centres, but when the dog is killed by intravenous injection of the oil the heart is paralyzed before respiration ceases, although at the same time it is remarkable how considerable are the individual pulse-waves when the pressure is almost at zero.

The results of our experiments upon the lower animals may be summed up as follows: In large doses, oil of gaultheria acts as a powerful irritant to the gastric mucous membrane, producing violent gastritis, with excessive vomiting, but in our experiments without purging. It is a stimulant of great power to the respiratory centre and to the vaso-motor centres, and probably also to the motor centres of the cord; in sufficient amount it acts as a paralyzant to these same centres. Upon the heart it exerts a paralyzant action, only apparent when very large amounts of it are in the blood, and very feeble when compared with that of most other volatile oils.

Very few cases of human poisoning by this drug have been put on record, and, briefly stated, they are as follows:

In the *Philadelphia Medical Examiner* for June, 1852, p. 347, Dr. T. J. Gallaher reports the case of a boy, æt. 9, who swallowed at least half an ounce of the oil. Shortly afterwards he ate some supper, after which he vomited freely, with a good deal of retching. There was great irritability of the stomach and all the symptoms of acute gastritis. His skin was hot; pulse, 125 per minute. Consciousness was retained. The respirations were very slow and laborious. There was marked dulness of hearing. Perfect recovery was reached in about two weeks.

In the *New York Medical Gazette* for 1867, p. 380, Dr. Juvet reports the case of a farmer, æt. 55, who, by accident, drank about half an ounce of oil of wintergreen of his own distilling, and therefore not very pure. He no sooner discovered his mistake than he said he would die, and refused to send for a doctor, saying that it would be a useless procedure. He drank large quantities of milk and eggs, and swallowed an infusion of tobacco in order to provoke vomiting. When the doctor at last arrived the patient's mind was perfectly clear, and he described how the occurrence happened very clearly. He suffered from severe pain in the stomach and hypochondrium, accompanied by an intense thirst, and "a kind of death sinking." He was perspiring very profusely. He said all things looked green, and this perversion of sight

finally deepened into blindness. His mind was yet clear. In a short time he lost consciousness, gradually his mind wandered, and he became comatose. An hour after this he died without a groan.

In the *New York Medical Journal* for 1875, p. 602, Dr. A. McL. Hamilton gives the history of the following case: A woman after taking a dose of cod-liver oil swallowed about half an ounce of the oil of wintergreen, being unaware of its properties. She complained of dizziness and drowsiness in the course of an hour, and this was followed by marked delirium. An emetic was given, and she vomited freely. Her pupils were contracted. Her extremities were cold, and her respirations were labored and quick. She complained of intense cerebral pain, and "noise in the ears" like the "buzzing of bees." She also had disturbed vision when she was not delirious, and also hallucinations of sight and of hearing. She had an irresistible desire to sleep, and was only prevented from doing so by the use of strong currents of electricity. A peculiar condition was a hemiparesis of the left side, with a notable loss of power.

Beck, in his work on "Medical Jurisprudence," mentions the cases of six soldiers who drank a tea made of andromeda, gaultheria, and ledum, and who suffered from vomiting, cold sweat, vertigo, and weakness, and one of them became insensible. These cases were hardly those of pure and simple oil of gaultheria poisoning.

The only symptom which we have seen produced by the largest therapeutic doses of oil of gaultheria have been those of mild cinchonism, or, in other words, those which are produced by therapeutic doses of salicylic acid.

Dr. N. A. Randolph and Mr. S. G. Dixon, of the University of Pennsylvania, found that the oil of gaultheria is readily absorbed when applied to the skin, or when inhaled from a sponge held in such a way that it did not touch the surface of the lips and chin, and that it appeared in the form of salicylic acid in the urine from forty to fifty minutes after the inhalation was begun.

We have experimentally confirmed this liberation of salicylic acid in the human system. The question arises whether all of the ingested oil is changed into the acid. To answer this question the following tests were made: One thousand cubic centimetres of the urine of a man who was taking 10 minims every three hours of the drug was distilled; another thousand cubic centi-

metres was shaken with sulphuric ether, and allowed to stand. As soon as the ether had thoroughly separated it was pipetted off and filtered, for the purpose of getting rid of the mucus and phosphates. In neither examination could unchanged oil be discovered. We next treated with ether, in the manner just described, one thousand cubic centimetres of the urine of a patient who was taking 200 minims a day of the oil, and failed entirely to discover a trace of unchanged oil. It must therefore, we think, be concluded that therapeutic doses of oil of gaultheria are entirely changed into salicylic acid in the system. Analogy certainly indicates, however, that when large toxic doses of the oil are taken a portion is altered in the system and a portion allowed to escape unchanged.

As the oil of gaultheria appears to act upon the system in the same manner as does salicylic acid, it becomes a matter of interest both practical and scientific to determine the equivalent doses of the two, or, in other words, how much of the oil we must administer to get the effect of a given quantity of the acid. About ninety per cent. of the oil is composed of the so-called methyl salicylate, having the formula $C_7H_5O_2CH_3$. This methyl salicylate is a substitution compound in which one atom of the hydrogen of salicylic acid has been replaced by a molecule of methyl, CH_3 . The formula of salicylic acid is $C_7H_5O_2$; of methyl salicylate, $C_7 \left\{ \begin{matrix} H_5 \\ CH_3 \end{matrix} \right\} O_2$.

In the animal system it would appear that one atom of carbon and two atoms of hydrogen in the methyl are removed by oxidation, and $C_7 \left\{ \begin{matrix} H_5 \\ CH_3 \end{matrix} \right\} O_2$ becomes $C_7H_5O_2$.

Now $C_7 \left\{ \begin{matrix} H_5 \\ CH_3 \end{matrix} \right\} O_2$ has an atomic weight of 152, while the atomic weight of $C_7H_5O_2$ is 138; so that the administration of 152 grains of the methyl salicylate ought to be equivalent to the giving of 138 grains of salicylic acid.

As 169 grains of the oil of gaultheria contain 152 grains of the methyl salicylate, they should be equivalent to 138 grains of salicylic acid.

ACUTE YELLOW ATROPHY OF THE LIVER.

By JOS. X. ZITEKE, M.D., BATESVILLE, IND.

THE yellow atrophy of the liver is proportionally one of those rarely-recognized diseases of which but few records compara-

tively come down to us in medical literature, if compared with those about other maladies to which human flesh is heir. Still, it appears to me that in reality the disease is not so rare as it seems, and that many cases which came to the observation of the physician were sometimes either misunderstood, ignored, or falsely classified, so that the profession in general is virtually obliged to rely chiefly upon those cases which were observed in the clinics of large hospitals, or upon those which were reported by the most prominent men of the profession as having occurred in their practice.

And, in fact, if we consider the general and particular symptoms of this dangerous—indeed, often fatal—disease, which in their first stage creep slowly in without any special characteristic signs, often even assuming the well-known features of other less dangerous pathological processes; further, if we reflect how seldom it is possible for a small town or country practitioner to confirm his diagnosis by a pathologico-anatomical dissection, it is hardly to be wondered that many a case of acute yellow atrophy of the liver is wrongly diagnosed and falsely classified in the statistical reports of the country.

In spite of this fact, however, the disease seems to have been well known to the fathers of medicine, for not only did Hippocrates and Galen classify it as a disease *per se*, but even many of the monastic authors of the middle ages, who practised extensively both medicine and surgery, bear testimony to its existence, its widely-separated nature from other diseases of the liver, and its rapid and deadly termination.

It was a great and not uninteresting surprise to me to find Albertus Magnus, the great Dominican naturalist, mention the disease in his extensive work, "De Naturalibus." He says as follows: "Ante omnibus est autem quidam morbus Hepatis, etsi aliquando consecutus Ictero tamen valde differens a consuetis morbis ejusdem organi; morbus valde periculosus vitæ, et propter cursum celerimum, et propter febrim acutam cerebri, ipsum terminantem. Videtur autem doctis in medicina, hepatem in isto morbo, aut naturam, aut accidentia mutari, aut in forma ipsa transformari." (*De rebus Natural.*, vol. ii., Augsburg edition, 1585.)

A similar opinion is also expressed in a work of later date, written by Archbishop Albik, M.D., of Prague, physician to the German Emperor Wenceslaus IV. Here also the disease is considered as a special disorder

of the liver, dangerous on account of its rapid course and violent brain fever. (*De morbis corporis humani Magistri Albici, professoris medicinæ in Univers. Pragensi, 1495.*)

Similar testimonies can be found in the writings of French and Italian physicians of the following centuries (see Verceloni, Baillou), who described the disease as a special and "*Inæ naturæ forma Icteri*," and who again were followed by other writers of the same opinion, till in the first two decades of our century the general attention of the profession was attracted to its study by the master-works of Abercrombie, Brien, Alison, and Bright.

Later, Budd and Rokitsky treated of the same subject, till finally Frerichs, Liebermeister, and Klebs made the disease a subject of general discussion in the profession. Nevertheless, in spite of the many eminent men engaged in the study of this malady, no positive, final, and decisive judgment was rendered, partly because some considered it as a mere local disease of the liver, whilst others considered it a mere symptom of a general constitutional malady of the whole organism.

During a practice of more than ten years there came but two cases of this disease under my observation, and these I dare to submit to the general consideration of the profession, conscious but too well of the dangerous ground upon which I am treading:

CASE I.—Mrs. A. M., married, mother of three children, 32 years of age, middle size, black eyes and hair, sallow complexion, firm bones, moderately well nourished, wife of a farmer in Spencer County, Indiana, born in Southern Germany, called to consult me in the year 1876. According to her own statement she remembers to have been sick but three times during her whole life; twice during the time since she was married. In her first sickness she suffered from cough, pain in the lower portion of the right side of her chest, had difficulty in breathing, was constipated, had no appetite, and her face and skin became of quite yellowish, dirty color. Was treated by a country doctor, who considered her case a consumption, and gave her many remedies, but without any relief. Finally she went to Cincinnati to consult Prof. Reamy. She remained in the city for six weeks, and returned home cured. She does not remember what the doctor called her sickness, but she was positive that he said there was no consumption.

From that time on she felt well till she became once more pregnant. At that time all

the former symptoms reappeared, and grew worse the further she progressed in her pregnancy. She had taken many remedies again, but without any benefit.

Finally she was delivered of a sound child. The labor was slow, tedious, and painful. But the physician who attended her was in no hurry, and left well alone. Hence she was delivered of a girl baby without any instruments, and with but little internal medicine, which the doctor gave her after the birth of the child.

Her recovery was very slow and very incomplete. Her bowels were yet constipated, and her skin still a little yellow. Finally she determined to start for Cincinnati again, when one of her many sympathetic friends gave her a bottle of a patent medicine which a peddler left at her house, and which promised on its label to cure nearly all the ills to which human flesh is, and ever will be, heir. She took several doses of the medicine, which purged her quite acutely, and after a few weeks of self-treatment she felt better, and the yellow color disappeared from her face.

At present the patient is again pregnant, and, according to her reckoning, in the fifth month. Her pulse is weak, her tongue covered with a dark yellow crust; her appetite is good, but she cannot eat, as she has great pain in her stomach after taking nourishment, and if she eats in spite of it she throws the food up quite undigested. Auscultation and percussion reveal dulness about a half-inch below the right costal arch, and dulness in the lower portion, on both sides of lesser curvature of the stomach. Sounds of the heart normal. The urine is spare and of dark color. Chemical test reveals but little of albumen, no sugar, no blood, no leucin nor tyrosin, but biliverdin. Specific gravity 1.027. Reaction decidedly acid. The pulse changed its type three times within one hour she stayed with me. Sometimes it was weak and thready, again it became quick and double-beating, and again very slow. The changes in the pulse can be seen on her face, which flushes at times, and resumes again its yellow dirty tint.

Further, she states that towards the evening her face begins to flush, and that many days in succession she cannot sleep on account of headache in the temporal and parietal region.

The expression in her eyes corresponds to the change observed in her pulse. At times they become quite wild and fiery, at other times they seem dull and have a far-away expression.

The bowels were constipated for days, and no pills could regulate them. She took as much as ten pills at once, and though she had three or four evacuations next day, they became as obstinately inactive within the next forty-eight hours. And again she would be constipated for three or four days, when suddenly diarrhoea would set in, last for a day or two, and be followed again by constipation.

As to her genital organs, they were normal; no prolapsus, no version or flexion to be detected. No sensitiveness in the ovarian region. At times of her menstrual period she used to be sometimes troubled with leucorrhœa.

Such was the *status præsens*. As to diagnosis, I cannot say that I was able to settle the matter with myself satisfactorily. I saw that there was a liver-disease here,—but which, that was the question. However, the continual use of nitro-muriatic acid internally, and of podophyllum, exchanged sometimes for hydrarg. chlor. mite, produced on her quite a beneficent effect, and after six or seven weeks, during which she was rapidly improving, I lost sight of her.

One important fact, however, I cannot pass over, namely, that whilst examining her carefully it seemed to me that her pregnancy was further progressed than she thought, and that the menstrual flow which she professed to have seen some four months ago may have been one of the unsure and ever-vacillating will-o'-the-wisps which deceive many a pregnant woman as to her real state.

Some five months later Dr. W. called on me, with the request to accompany him to a sick lady whom he had delivered some eight weeks previously, and who had afterwards contracted puerperal fever, from which she had recovered about eight days ago.

According to his statement the labor had been long and tedious, and, as the patient was growing weaker every moment, he thought it necessary to terminate it by the use of the forceps. About forty-eight hours after the birth of the child the first symptoms of puerperal fever set in, though no antiseptic precaution—*i.e.*, as it was used in those days—was neglected.

During the whole length of the fever he and another physician of the village had attended upon her day and night, and both of them proclaimed it as one of the most severe cases from which they had seen a woman recover. Indeed, it seemed strange that a woman who had suffered so long and so much during her pregnancy should have resisted the deadly attack of a fever to which many

hundreds of stout and robust women fall victims.

Since the last few days of her recovery, however, another set of symptoms appeared, which caused considerable alarm both to the friends and the attending physicians of the sick woman. It was for this reason that the doctor wished me to see the sick lady with him. The history of the case, as given by the doctor, was as follows:

It was about on the fifth day of her convalescence that shortly after dinner she was seized with nausea, which was followed by a copious vomiting. After the ejection of the nourishment a quantity of dark-greenish fluid followed, which formed a brownish sediment in the vessel. Two rather watery evacuations of the bowels followed a short time after the vomiting, of very pale color, and mixed with numerous kernels of the same dark tint. At the same time she complained of great pain in her head, was restless and excited, and again stupidly quiet. Spasmodic contractions both of the lower and upper extremities were noted.

Such were the symptoms given to me on our way to the patient. The *status præsens*, as observed by me, was this:

The patient was lying in a comatose state, from which, however, she awakened from time to time, and uttered a kind of inarticulate or again piercing cries. The skin was dry, of dark color, as well as the conjunctiva bulbi.

The pulse was irregular and weak; very quick, 156 per minute.

The tongue was coated with a dark fleshy fur; also her lips and the mucous membranes around the frænulum labii inferioris were covered with similar sordes.

The temperature was 104.5°.

The urine was of dark wine-color, with a similar sediment. Chemical test revealed no albumen, no sugar, but biliverdin and tyrosin.

Pectoral examination revealed bronchial fremitus, whilst the dulness over the lower portion of right sternum was nearly gone, but could be observed at the back, about one and a half inch from the spinal column.

Such was the state of the patient. My diagnosis was atrophica hepatitis acuta. Prognosis, death.

Twenty-four hours after this my first visit to the patient, whilst on my way to see her again, I heard that she was dead. Yet as she had been about four days ago on a fair way to recovery, her husband, a bright German, gave a willing permission for a pathologico-

anatomical examination of the chest and upper part of the abdomen of the body, which examination was performed the same evening.

The most important facts detected were these:

Lungs show signs of recent bronchitis. Heart normal. Liver sunk back near the spinal column and covered with the bowels; considerably diminished; of soft and yellowish color; the capsule ragged.

The gall-bladder filled with a greenish fluid; also the ductus choledochus and the neighboring portions of the small intestines. The mucous membrane of the lower portion of the intestines covered with dark reddish patches (hemorrhagic ecchymoses, or what the French call *plaques hemorrhagiques*).

The end of the colon transversum and descendens were filled with a whitish, hard mass of excrement, some portions of which, however, were of light yellow color.

In the stomach, near the pylorus, were the same hemorrhagic metamorphoses and yellowish fluid.

The spleen was enlarged, of whitish tint and soft consistence.

The kidneys soft and shrunk together, and in some portions degenerated.

CASE II.—S. W., 37 years old, male, of German parentage, born in Pennsylvania. Entered the army when eighteen years old, and served to the end of the war. His bodily build was strong and muscular, and a little inclined to adipous formation. After the war he married and opened a saloon. Says that he was never sick before, except once whilst in the army, where he had contracted a hard chancre, which was followed by inflammation of the inguinal lymphatics. Some time after the cure of the local evil he was attacked by a kind of rash, which appeared on his extremities and chest, for which he underwent treatment by the old German method of mercurial inunctions. After eight such inunctions he was cured. Since that time he had been always well, had two children, one of which died from some brain-trouble. The other is alive and healthy. Like nearly all German-Americans, he was a drinker, but with a decided relish for whiskey, which he preferred to the beer of his fathers.

His present trouble dates back about fifteen months, when he acquired what he called dyspepsia. He could not digest his food, and was troubled with vomiting, chiefly after breakfast and dinner. Had pain over his stomach, and often an internal griping pain,

which began below the os xyphoideum and spread all over the abdomen, from which it would sometimes even go into his feet, producing a painful crampy sensation.

His dyspepsia continued to trouble him more and more, and, though he professed to have used all kinds of drugs prescribed by doctors and advised by friends, he grew worse rather than better. Since some months his bowels became decidedly inactive; his ejections had a very bad smell, and were of whitish color. The taste of his mouth, chiefly in the morning, was quite sickening, so that he could not help vomiting. His tongue and lips were coated by a kind of brownish rash or fur. The conjunctiva bulbi had a slight yellow tint; the eye itself a dull and melancholic expression.

The results of a physical examination were as follows: The lungs revealed in the apex of the right lung bronchial breathing and slight crepitus, resembling the *râle muqueux*; the heart normal. Stomach bloated, enlarged, yet quite elastic on pressure; no strong pain. Liver enlarged about half an inch over the costal arch; spleen in the same condition, and very sensitive to the strokes of the percussion-hammer. Pain in the back corresponding with the frontal hepatic region, and going up to the angle of the scapula.

Pulse full and quick, 95 per minute.

Urine not examined.

He was told how necessary it was for him to abstain entirely from all alcoholic drinks, and was put on a treatment by nitro-muriatic acid, and in order to regulate his bowels a mixture of iris vers., taraxac., and podophyl. was given.

He returned about two weeks later in an improved condition. The same treatment was continued, and the same advice repeated as a *conditio sine quâ non*.

Eight weeks after his second visit, the icterus had entirely disappeared, the bowels became active if not regular, and the patient was dismissed with the same advice as given before.

About six months later I was called one evening to his house, the messenger reporting him very bad; in fact, he was not expected to live. The miserable habit of years, which was digging his very grave some months ago, had again prevailed upon him, and in spite of his knowledge of the consequences he indulged in it freely. The promise he had given me to sell his saloon he had never kept, or perhaps never intended to keep at all, for there are yet some men so stupid who consider it a good joke to lie to their physician, as if a man

could commit a greater foolishness than to speak untruth to his doctor or to deceive his wife.

Having thus fallen back to his daily drink of whiskey, the dangerous symptoms returned one by one, but in another form and intensity, and in spite of pepsine, lacto-pepsine, gentian and rhubarb, colocynth and mercury, administered by a friendly physician and fellow-drinker, they became worse and worse, till they confined him to bed. The period in which the first symptoms appeared again to the day when he took to his bed was about ten to fourteen days.

Status præsens.—The patient had evidently lost flesh; he was still a muscular man, but his powerful, bony frame was all that struck the eye of an observer. His skin was of slightly yellowish color and entirely dry, hot dry, so well expressed in the *chaleur mordant*. The tongue was coated with a brown-blackish fur, forming nearly a membrane all over the tongue and lips. His breath was sickening; indeed, the whole room was full of a nauseously offensive smell. From time to time he was subjected to pain in the stomach, and then vomited a yellowish watery fluid, which formed a brownish sediment in the vessel. The smell of the vomited matter was decidedly acid.

His bowels were again constipated, and though he had taken the previous night ten Ayer's pills, he had no operation till an injection, consisting of sulph. mag., ole. rici, and a little ol. terebinth., was given.

He complained of excruciating pain in his head, chiefly in the temporal and occipital region, which went down like a knife to his neck and back. There was also evident twitching in the muscles of the lower extremities and abdomen. Sometimes he fell into a kind of stupor, from which he awoke in a few minutes shrieking and talking the wildest nonsense.

The abdomen was bloated and very painful to pressure. The pulse was 140 per minute. Temperature, 105°. The heat was characteristically dry.

The urine contained very slight traces of albumen, but large quantities of leucin, also cholic acid; specific gravity, 1.027; reaction acid. The sediment in the chamber-vessel was of green-yellowish color.

Auscultation: percussion gave evidence of a chronic bronchial catarrh of the lungs, a normal heart, but the hepatic dulness considerably smaller than before. Pain very severe on pressure.

The abdomen and lower extremities were covered with about ten large petechial spots resembling roseola of typhoid fever.

Such was the state of the patient as found that evening, and such it remained for the next two days,—*i.e.*, till his death.

Though it was possible to procure him some ease by a copious evacuation from his bowels, of a clayish hard, and later, yellowish, sticky substance, though the frequency of the vomiting was also diminished and his temperature lowered to 101°, yet it was impossible to keep it down; even in spite of the increased doses of antipyretics it reached shortly before his death 106°.

The delirium continued steady for the whole two days, and on the third—*i.e.*, the day of his death—it gave place to a comatose stupor, from which it was impossible to arouse him.

The icterus grew darker in shade, and after death became more of a green than of a yellow hue.

Several hemorrhagic spots were found upon his back.

No post-mortem examination was made, as his wife would not allow it.

My diagnosis was atrophica hepatitis acuta, based chiefly on the vomiting, the great headache, the restlessness, somnolence, and finally the delirium, accompanied by spasmodic twitching in the extremities and abdomen.

The changeable pulse, the dark fur covering tongue and lips, the leucin and cholic acid in the urine, the diminished hepatic dulness, all this speak for my diagnosis, whilst the steady high temperature for three days, and perhaps longer, seems to be quite out of the common.

It is, therefore, relying chiefly upon the symptoms enumerated, that I based my diagnosis, and for that very reason I do not submit it to the profession with a self-important and conscious *magister dixit*, as seems to be a fashion of our days, but trust it to the kind criticism and private judgment of each member of the profession.

However different from each other these two cases may have been, they contained still both some symptoms which, in themselves, must necessarily attract the attention of every judicious physician.

1. A previous or several times repeated icterus, which was the precursor of the fatal illness in both cases, though more than four months in the first, whilst about seven months intervened in the second case.

2. The gastric symptoms, which very often

are considered as dyspeptic, chiefly in drinkers and in malarious districts.

3. The color, test, and specific gravity of the urine, and above all the presence of tyrosin in the first, and of leucin and cholic acid in the second, case, which are hardly ever found in another kind of liver-disease, but which are always, either one or both, present in the acute atrophy of the liver. (See Freichs, Collingworth, Rokitsansky, and Klebs.)

ON THE TREATMENT OF HEMORRHAGIC MALARIAL FEVER.

BY DR. R. H. DAY, BATON ROUGE, LA.

IN recent years much has been written about malarial hemorrhagic fever, or malarial hæmaturia, and its treatment; but so discordant is medical opinion as to its essential nature, and so diverse the plans of treatment recommended, that to-day the disease and its treatment are shrouded in confusion and uncertainty.

I shall limit myself in this short paper to its treatment only, premising, however, that unless a correct knowledge and comprehension of its real nature, and the pathological changes wrought in the system by it, be had, its treatment must remain vacillating, uncertain, and empirical.

Having, from my first entrance into the medical profession, been thrown into highly-malarious districts of country, it was my fortune early in my medical career to become familiar with this most terrible disease, both in its mild and most virulent forms. What I have to say, therefore, about it is predicated upon a long, personal, and practical experience, and will have, at least, the merit of freshness and personality.

I think the chief obstacle in the way of its correct treatment consists in the fact that it is too commonly looked upon as a disease primarily of the kidneys, and the other lesions as secondary thereto; whereas it is emphatically an hepatic and blood disease of malarial origin, no case ever occurring except in persons presenting in the most marked and expressive manner the evidences of unmistakable malarial toxæmia. How the malarial poison acts upon the human organism to bring about these pathological changes it is not my purpose now to investigate, but simply allude to them to make the course of treatment which I have found most successful rational and intelligible to my readers.

As a matter of course, the treatment must somewhat vary according to the stage of the disease when first seen, and to the type of the disease, whether mild or of a grave form; for it must be borne in mind that, like all other diseases, it has its different grades of severity or types. If the disease is mild in its outset, characterized by decided intermittence in its symptoms and the presence of red blood-corpuscles in the urine, or, what is sometimes the case, the hemorrhage is from the bowels instead of by the kidneys, it will indicate that the blood is less profoundly altered, and we may confidently expect an easy triumph over the disease. Here a few small doses of calomel combined with opium and bicarbonate of sodium to stimulate the biliary secretions, followed by efficient doses of quinine, will very promptly break up the chain of morbid actions and place the patient in a state of convalescence. When, however, the type of the disease is grave and violent, which is more often the case, the stomach will be greatly nauseated, with frequent retching and vomiting of a greenish fluid filled with mucous flocculi, the pulse small and feeble, skin cool or cold, with pronounced chill or shivering and frequent emissions of bloody urine, apparently (really) disintegrated blood, destitute of any red blood-corpuscles, but abounding in the débris of the decomposed blood. Under these conditions we have no time to parley. Here decision and promptitude must mark our course. We must at once apply over the epigastrium and liver a blistering plaster, give a hypodermic injection of morphine, from $\frac{1}{4}$ to $\frac{1}{2}$ gr., and repeat after one or two hours. If the stomach is not quieted and reaction established, give 3 to 5 grs. of calomel with bicarbonate of sodium every two to three hours till enough has been retained to act with certainty upon the liver (generally 15 to 20 grs. suffice). If the calomel does not move the bowels after a reasonable time, say four to five hours after the last dose of the mild chloride, administer enemas of warm water containing a tablespoonful of camphorated oil every hour or two till the bowels have been gently evacuated. If the stomach is still troubled with nausea, give a drop of creasote, made into an emulsion with bicarbonate of sodium and a small quantity of morphine, with aqua menthæ every one or two hours *pro re nata*, and as soon as a bilious discharge has been had from the bowels or reaction established, commence with quinine, either by the stomach or by hypodermic injection, in from 5 to 10 gr. doses, for its specific effect in counteracting or ar-

resting the malarial toxæmia, and push it to its systemic manifestation; generally from 30 to 50 grs. will be quite sufficient. As soon as the function of the liver is restored or appreciably aroused, and enough quinine has been introduced into the system to make its physiological effect manifest, commence to give the muriated tincture of iron in full doses, 20 to 30 drops every four hours, with the object of toning up the debilitated blood-vessels, reconstructing and vitalizing the hæmoglobin and red blood-corpuscles, thus endeavoring to restore the normal and vital condition of the blood.

If the kidneys should fail to act or work feebly, frequent frictions over the back, with a liniment composed of spirit of turpentine, tincture of digitalis, and whiskey rubbed in warm, will often be found efficient in stimulating them to action. Sometimes the administration of spirit of turpentine inwardly in 3 to 5 drop doses may be needed to supplement the liniment frictions in hastening the resumption of functional activity of the kidneys.

Such have been my guiding principles and course of treatment of this disease; and so well satisfied am I with the results that I can with confidence commend the same to any physician who may encounter in his practice this very serious malady.

ON THE TREATMENT OF SCIATICA AND NEURALGIC AFFECTIONS BY CONGELATION WITH METHYL CHLORIDE.

BY HENRY B. MILLARD, M.D., A.M., ETC., NEW YORK.

DR. J. M. Debove, of Paris, in the *Gazette Hebdomadaire*, August 15, 1884, described a method of treatment, first employed by himself, of various neuralgic affections, particularly sciatica, by the local application of the chloride of methyl (*not methylene*). I have seen various accounts in medical journals of this method, but most of them very brief, and none of them indicating a real knowledge of it.

Being in Paris the summer of 1884, when Debove first employed this treatment, I passed considerable time with him at the Hôpital des Tournelles (Hôpital Andral), of which he is the physician-in-chief, and at the Hôtel Dieu, where he was temporarily filling the place of Dr. Germain Sée, observing the effects and method of treatment.

Dr. Debove in the article above referred to says, "Revulsives appear to act in sciatica in

exciting the nervous extremities of the affected nerve, but the number of nerve-filaments excited is always limited; it is impossible indeed to apply a blister which extends from the hip to the calcaneum, or to cauterize the entire surface of the limb.

"I thought that this revulsion could be obtained in a different form by congealing the skin, for congelation may be effected and the skin regain the integrity of its functions. There seemed no objection to trying this, for the worst accident would be the production of a slough (*eschar*), which in the case I intended to apply it did not seem of great moment, as the treatment of sciatica by the cautery has become classical."

The *chloride of methyl*, CH_3Cl , is a gas which is rendered liquid by pressure. This product is extensively fabricated in Paris by heating trimethylamine, which in its turn is made from the *vinasses*, the spent wash of the stills in which the molasses of the beet-root is distilled in the production of alcohol. It is much used in laboratories for the purpose of producing intense cold, and in freezing pathological specimens. When placed in an open vessel it boils at a temperature of -23°C . ($=-11^\circ \text{F}$). It is not explosive, and in strong cylinders can be transported without danger. In France it is sold at six francs the litre.

Dr. Debove first employed a strong glass siphon, filled from a leaden retort containing the liquefied gas; the liquid is liberated by turning a screw at the top, through a flexible leaden tube with a finely-perforated brass point, by which it can be directed upon the affected part. The liquid on being liberated becomes at once volatilized, and escapes in the form of a very fine spray. Dr. Debove has tried to produce the same effect with a Richardson's apparatus, but ineffectually. Within the last year, Galante has manufactured a strong copper siphon which is absolutely free from danger, as it cannot be broken.

The liquefied gas directed upon the skin produces immediate whitening and hardness by congelation; these two effects disappear almost immediately, the skin becoming red and hot. To quote from Debove: "The jet of methyl chloride is directed upon the skin of the entire region which is the seat of pain, in sciatica from the sacrum to the malleolus." Patients experience a burning sensation, which is painful, but in no wise comparable to that produced by cauterization by heat, nor is it of long duration. No dressing is necessary. Practically, the effect is the same as that of an extensive, superficial, and rapid cauterization

without vesication, or destruction of the epidermis.

I have seen Dr. Debove use it very freely on a part to ascertain if a sphacelus could be produced. He has informed me, however, that he has never known it to produce such a result. The worst effect he has observed, and that but rarely, has been slight vesication. Two or three cases have, however, been reported in Paris where erysipelas followed. Dr. Debove informs me that he is unable to comprehend this, as in his own practice he never has observed any ill effects. It may be that in the cases referred to it was applied to loose tissues, or that the systems of the patients were impoverished.

This treatment is not suited to all forms of neuralgia, as, for example, not to that having a syphilitic origin; it is most applicable to those cases having a rheumatic basis. "My first patient," says Debove, "was affected with sciatica neuralgia, and had been treated in vain for various attacks by the actual cautery, and had not been helped under my service by a month's rest in bed. I applied the jet of chloride of methyl over the entire surface affected, from the hip to the external malleolus. A minute after this patient, who had not been able previously to set his foot to the ground, walked without limping, declaring himself cured. He was quite stupefied by his cure; I confess my own astonishment was not less than his, but I was well aware that marvelous therapeutic results are often a mere coincidence or are due to the imagination, and that further trials on the part of the physician are not always attended with similar success. This is especially true of sciatica which has been cured by the simple cauterization of the lobe of the ear. Thanks to the frequency of the disease in question, I have been able to make further trials, and I can state to-day that the effects of the treatment have been constant and instantaneous.

"I cured the first case three months ago, and up to the present time there has been no relapse. My other patients were either cured at once, or have had light relapses, immediately yielding to the application of the methyl. These patients suffered from simple sciatic neuralgia, of the form known as rheumatic. Their affections had existed from two weeks to three months, and they all suffered so much that they could not put their feet to the ground."

The following cases I myself saw treated, conversing with the patients and examining the records of their cases.

Hôpital des Tournelles.—Robert, æt. 49. Sciatica of rheumatic origin of six months' standing. Almost entirely cured by two applications, each one being followed by instant relief.

Male patient, æt. 50. Acute sciatica nearly cured by three applications.

Male patient, æt. 31. Sciatica of fourteen months' standing. Disappeared almost entirely after one application.

Male patient, æt. 50. Intercostal neuralgia of seven months' standing cured by one application.

Hôtel Dieu.—Man, æt. 40. Sciatica which has existed about eleven months. Nearly cured by a single application.

Paul Bonvert, aged 30. Sciatica of a year's standing cured by one application.

Thirry, æt. 37. Sciatica for six months. Had been treated by the actual cautery. Cured by one application of methyl chloride.

There were a number of other cases of a similar character which fell under my observation. As to whether what I have designated as a "cure" in these was a radical one I had from my own observation no means of knowing. Dr. Debove afterwards informed me that these cases seemed perfectly cured, though relapses might occur. The effects of the application seemed indeed, in some cases, like extraordinary feats of magic. A patient would be recumbent from pain to such an extent as to make movement of the affected part practically impossible, and immediately after the application of the spray would be able to walk with facility. It seemed to produce local anæsthesia without loss of power. And yet cures of sciatica by a single operation with the cautery or otherwise are possible. I myself have effected them in one or two cases, and one of my patients, a delicate girl, who suffered agony which could be relieved only by almost dangerous hypodermic injections of morphine, was cured by a single application to the sciatic nerve of the galvanic needle.

That the methyl chloride used as employed by Dr. Debove may be of the greatest value I fully believe. Especially could it be made to take the place, in many cases, of the thermocautery. It is less painful, it can be used with greater rapidity, and can be made to cover a large surface.

Owing to the impossibility, thus far, of obtaining the chemical in this country, I have tried to produce the same effect with petroleic ether,—rhigolene. With a Richardson's double bulb I have reduced in three or four minutes the temperature of water in a test-tube to zero,

and in five or six minutes have produced congelation of the surface. This, however, is a very slow process, especially when congelation of a large surface is sought, compared with the chloride of methyl, which almost instantaneously reduces the temperature to 11° F. below zero. Aside from the time consumed, the rhigolene does not produce so much blanching of the skin, and the heat and reaction after its use are less.

The cost of the manufacture of the gas and of the siphon here would be considerable. A glass siphon even, properly made, would cost not less than fifteen dollars, in Paris the cost is twenty-seven francs, and is inferior to the copper siphon, which alone, I think, should be used, as being absolutely free from danger.

I present this mercantile aspect of the subject with other details, because I hope yet to see the chloride of methyl extensively employed here. The price of the copper siphon holding two kilogrammes, made by Galante, is one hundred and seventy-five francs; the two kilos. costing twelve francs. The same firm has also constructed a copper cylinder with all the accessories for filling the siphon, etc., holding twenty-five kilos., the price being three hundred and fifty francs. The cylinder and the siphon, each filled, would then cost eight hundred and twenty-five francs. The whole imported here, with duties, etc., would, without allowing any profit to the importer, cost nearly two hundred and seventy-five dollars. So it is apparent, I think, that unless the chemical can be made here, the prospects of its being extensively employed this side the water are not great. I do not despair yet, however, of having its fabrication brought about here.

NOTES ON A CASE OF FÆCAL CALCULI.

By DAVIDSON SCOTT, M.D., SPOKAN FALLS, WASHINGTON TERRITORY.

IN November, 1877, I saw a woman—aged 60, lymphatic temperament, married; occupation, housekeeper; native American—in consultation with the family physician. Had been suffering for two years from jaundice. Had suffered previously from attacks of bilious colic, which had, for the past year, become of daily occurrence. She had been large and fat, but was now much emaciated.

No bile entered the alimentary canal. All the fluids of the body were saturated with it; vicarious elimination was taking place through all the emunctories. The under-garments

were literally dyed with it. It required no great amount of discrimination to diagnose mechanical obstruction of the common duct of the liver.

As I expected, palpation revealed a distended gall-cyst filled with gallstones. They could be felt "like marbles in a bag." Further examination revealed a number of hard bodies slightly movable, and doubtless within the transverse colon. *Diagnosis*: "Mechanical obstruction of ductus communis, due possibly to impaction from gallstones, but more probably to fæcal calculi in that part of the colon where it is in relation to the common duct of the liver." The hard bodies in the transverse colon I felt assured were fæcal calculi.

The patient was ordered to take, if possible, a pint of olive oil daily, to be continued until it produced free catharsis. The treatment was commenced next day, during which she took one-half pint, and on the second and third day thereafter a pint daily. The oil began passing the bowels (undigested, as I anticipated) on the second day, and on the third several fæcal calculi were evacuated, one of which was described as being as large as a walnut. The oil was continued some days without further result. She made a rapid recovery, in three weeks being able to come to my office in the city,—Oskaloosa, Iowa,—riding twelve miles by rail. At this time nearly all traces of the jaundice had disappeared. When last heard from, within a few months, she was still enjoying good health, having had no return of the disease.

A NEW POWDER-BLOWER.

By J. D. KELLY, A.M., M.D., LOWVILLE, N. Y.

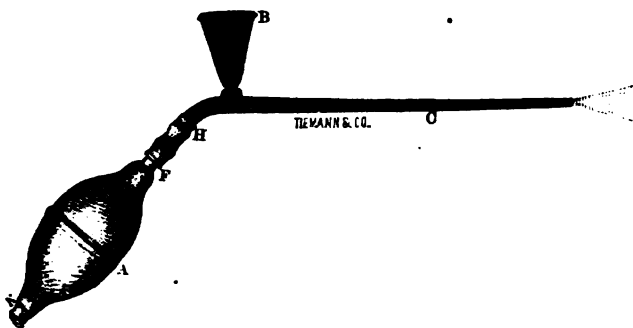
THE necessity of applying a medicament in the form of powder directly upon affected mucous surfaces is demonstrated repeatedly in every-day practice. In some affections, and under certain circumstances, no measure is so greatly in vogue and so confidently relied upon, and only the difficulty of its execution by the old methods upon affected surfaces in the oral, aural, and vaginal cavities detracts from its superiority over every other.

The application to surfaces in these cavities is often made by blowing the powder through a glass tube or a roll of paper, one end of which is held in the mouth of the operator. The danger, to say nothing of the inconvenience to the physician in so doing, is

often very great. About a year ago a physician in this place, while making an application of powder in this way through a roll of paper to a diphtheritic throat, contracted the disease, and in a few days his chances for life were trembling in the balance.

The powder-blower sold in the shops is so imperfect in its work and construction that it is seldom found in use. In it the bulb is compressible, but it is necessary to place the thumb over a hole in the side of the bulb as it is compressed in order to compel the air to escape by way of the tube, and thereby carry the powder with it. The bulb attached to the end of the tube and in line with it brings the hand when operating it directly in the way of vision, and so obstructs efficiency. The powder is dropped through an oval opening in the tube with considerable difficulty in charging it, and, upon compressing the bulb, it is all blown out at once, making necessary the delay and inconvenience of "loading up" again before proceeding in the application.

To overcome all such dangers and difficulties I had the following instrument made for me by Messrs. Tiemann & Co., of New York.



It consists essentially of three parts, viz., the bulb A, the reservoir B, and the barrel C. The bulb A is of soft rubber, and compressible. It is equipped with two valves, one at E and one at F, both opening in the same direction. The reservoir and barrel are of hard rubber, and are detachable at H from the bulb for packing or cleaning. The reservoir is closed by a cap, which screws closely down upon its top. To operate it the cap of the reservoir is removed, and the medicament in fine powder dropped in, of which in bulk it will hold quite a teaspoonful. The cap is then screwed on, and it is ready for use.

The advantages or superior qualities of this instrument consist, first, in the bulb A being below the line of vision, and so out of the way, thus enabling the operator to keep the

affected parts in view and make the application with greater accuracy; second, in the facility of loading the reservoir and in the quantity it will hold; and, third, in the ability to make long continuous application without the trouble of refilling the reservoir.

It has proved in my hands very efficacious, and the facility of its operation will, I think, recommend it for general use.

ON THE INFLUENCE OF FEVER UPON THE ARTERIAL PRESSURE.

WIEGANDT communicates to the *Centralblatt für Medicinische Wissenschaften* of January 2, 1886, his observations made on fever-patients with the view to determine the arterial pressure before and after the administration of antipyretics.

Eighteen experiments made with kairine in typhoid fever (one in erysipelas) gave wholly negative results. Eighteen further observations with antipyrin (in cases of typhoid fever, pneumonia, erysipelas, pyæmia, and tuberculosis) showed important differences only in four patients, especially in the instances of erysipelas, tuberculosis, and pyæmia. In the two former instances the blood-pressure was found to be lowered, and in the latter raised, after the reduction of the temperature by the drug. In five patients (cases of typhoid fever, pneumonia, and erysipelas) who had received thalline, the blood-pressure fell only in erysipelas after the fall of temperature, while in the two other affections no change in the pressure was observed. The influence of defervescence upon the blood-pressure is consequently either wholly negative or only a very slight one.

Three observations made with cold baths gave, as was expected, very similar results.

LAUGHING-GAS.

That the so-called laughing-gas is after all not as innocuous a drug as possibly many dentists tell their patients, has recently been strikingly proven by the case of DR. DUCHESNE, of Paris, who had a patient die while under the influence of this anæsthetic. It will consequently be indicated to employ greater care in the use of laughing-gas than has been done hitherto, and to examine the patients to be anæsthetized as to a possibly existing cardiac defect.

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Leading Articles.

ACCIDENTS FOLLOWING THE USE OF COCAINE.

THE rapidity with which reports are appearing of various forms of accident following the use of cocaine show that this drug, like nearly all other valuable articles in our materia medica, is not entirely free from its disadvantages, and they point to the necessity which must be observed in the selection of cases suitable for the use of cocaine or to the more careful study of the conditions which should govern its application. Bunge, in the *Klin. Monatss. für Augenheilkunde*, vol. xxxiii. p. 402, reports three cases of exfoliation of the corneal epithelium after the instillation of a three per cent. solution of cocaine into the eye previous to an operation for cataract, while in the fourth case vesicular keratitis lasting for five weeks followed local applications of this drug. Bunge's experience appears to have been unusually unfortunate, as he further states that in six cases of cataract operated on under cocaine-anæsthesia he noticed parenchymatous cloudiness of the cornea, which in one case was intense enough to entirely exclude light from the eye.

Unfortunately, the experience appears to be

very general as to the production of panophthalmitis after the use of cocaine either in solution or in gelatin disks, and at a recent meeting of the Clinical Society of London (*Pharm. Journ. and Trans.*, November 28, 1885) the majority of the members present seemed to believe that such a consequence was very frequently the result of the cocaine. Gräfe also states that he has found chronic interstitial keratitis much more common than before its employment.

It even appears that the instillation of cocaine into the conjunctival sac may produce symptoms of general intoxication. A number of such cases are recorded. Thus, Mayerhausen (*Centralb. für die Gesamte Therapie*, October, 1885) relates a case of a girl 12 years of age in whom 2 drops of a two per cent. solution were instilled in the conjunctiva four times, at intervals of five to eight minutes, for the removal of a portion of the cornea, injured and stained through a wound from a steel pen. In all only a little over $\frac{1}{10}$ of a grain was administered, of which certainly one-half must have been lost through the tears. Immediately after the operation the child commenced to complain of headache, which became more and more severe until it was almost unbearable. Nausea and vomiting persisted through the entire day. The patient was greatly prostrated; stumbled in walking, her speech was almost entirely destroyed, as though her tongue was paralyzed. These symptoms of poisoning lasted all through the night, in which no rest was possible, and gradually disappeared towards the evening of the following day. In commenting on this case, Königstein calls attention to the difference between these symptoms and those which are generally recognized as characterizing cocaine-poisoning, and he suggests their similitude to the symptoms of atropine-poisoning, and doubts whether the preparation employed could have been a perfectly pure one; while, on the other hand, he suggests that the operation on the cornea through reflex action from the trigeminal nerve might be sufficient to evoke the symptoms detailed above. It hardly seems credible that a cocaine preparation could be adulterated with atropine, and it seems to us that, in the present state of our knowledge of the physiological action of cocaine, we can hardly exclude the results above given from that action simply because they do not tally with the general ideas which we have now as to that action.

Dr. Ziem also reports a somewhat similar case, in which 2 drops of a four per cent.

solution of cocaine applied to the eye of a man caused symptoms of syncope (*British Medical Journal*, November 21, 1885). In a few minutes after the pupils had become dilated, the patient's face became pale, sweat broke out on his forehead, and his breathing became embarrassed. Dr. Zeim refers to seventeen other cases recorded in ophthalmological literature in which toxic effects followed the use of cocaine. In three it was injected hypodermically, and in fourteen it was brought into the conjunctival sacs. In some of these cases the symptoms were transient, and consisted of pallor of the face, giddiness, and sweating of the face and neck. In others there were dyspnoea, great feeling of prostration, malaise, and apathy, lasting sometimes for several days. Vomiting and headache have been rarely present. The subjects were in some cases feeble, aged women; in others they were strong and healthy individuals, both male and female. Dr. Heymann, in the *Deutsche Med. Wochen.*, No. 46, 1885, reports a case in which the symptoms following the use of cocaine very closely resemble those above reported by Mayerhausen. The patient was a boy, in whom solution of cocaine was liberally applied to the pharynx and larynx for the removal of a small papillomatous growth from the latter. Even before the tumor was removed the boy began to show signs of intoxication; he was apathetic, spoke in a halting, hesitating manner, and had considerable difficulty in walking. Pulse, temperature, and respiration appeared to have been all slightly increased. The symptoms gradually passed off ten hours after the operation. Dr. de Haviland Hall (*Lancet*, November 21, 1885) describes a case in which cocaine spray applied to the posterior nares caused laryngeal spasm.

It is, of course, as yet impossible to say whether these effects are due to idiosyncrasy, or whether they are caused by decomposition in the solution of cocaine. This solution, as is well known, is not a permanent one, and is particularly liable to the development of fungous growths, and we have already at various times referred to different methods of preserving cocaine solutions. Of course the best method is to make the solutions fresh when required. Mr. H. McHardy, who has often met with disadvantageous results from the use of cocaine, thinks that fifteen days is the longest time that it is advisable to keep the solution of cocaine. Gelatin disks containing cocaine are hydroscopic, and they also are not any more per-

manent or but little more permanent than the watery solution of the alkaloid.

In this connection a case of cocaine-poisoning very closely resembling opium-poisoning, and reported by Dr. J. S. Spear in the *Medical Record*, November 14, 1885, is of interest. The case was that of a man aged 29 years, who, after being on a spree, took a hypodermic injection of the cocaine solution, as he expressed it, to sober up with. About two hours afterwards it was noticed that his face was ashy pale, hands and lips quite blue, drops of perspiration covered his forehead and ran down his neck. His eyelids were tightly closed, mouth half open, pupils contracted, pulse feeble and fluttering and not countable, face congested and of a whitish-gray color, and the body bathed in a cold perspiration. Respiration slow and almost imperceptible, and not at all stertorous. A diagnosis of opium-poisoning was made and the stomach-pump employed, but the stomach was found empty, and $\frac{1}{10}$ of a grain of atropine was then injected, and strong coffee forced down the throat, the patient at the time being unable to swallow. Under flagellation, and possibly as the result of the above treatment, in about one hour and a half he showed signs of returning consciousness. After taking coffee several times he finally vomited it, and gradually recovered. He then gave the following history as to the details of the case:

His occupation is a hospital nurse in the U. S. Marine Corps, and he is addicted to the use of cocaine to allay a craving for alcoholic stimulants. On the afternoon of October 15 he left the barracks about two o'clock, went directly to the manufacturing laboratory of Dr. Edward R. Squibb, in Brooklyn, purchased two small vials, each containing five grains of muriate of cocaine in powder, dissolved the same by filling the vials with water which he obtained in a bar-room; he then crossed over to New York, had his hypodermic syringe repaired at an instrument-maker's shop, and about 3.30 P.M. gave himself the first hypodermic of cocaine, probably about 1 grain.

He had already taken several drinks, and continued to drink from time to time all night, going from one saloon to another. Every few hours he took a hypodermic of cocaine. He thinks he was not intoxicated at any time, is quite sure he did not spill any of his cocaine, but took it all before he returned to the barracks at 8.30 A.M., except the last portion, which he took in the cell as before related.

He declared most positively that he did not purchase nor take any morphine on this occasion, and indeed never took a dose of morphine in his life, and offered to make an affidavit to that effect. There was no evidence of suicidal intent. The purchase of the cocaine was confirmed by inquiry made at Dr. Squibb's laboratory, where it was stated that the same man had frequently purchased cocaine there before. The two vials with Squibb's cocaine labels on them, both empty, one corked, were found in the cell. Both showed unmistakable signs of having recently contained cocaine and not morphine. His own hypodermic syringe had been used to administer the atropine, so that an examination of its contents for cocaine or morphine was considered unreliable.

ON THE ACTION AND ELIMINATION OF IODIDES.

THE high repute which iodine and its preparations have enjoyed ever since the introduction of this metal into therapeutics by Curtois at the beginning of this century, rests almost exclusively upon an empirical basis. The physiological and experimental researches instituted with these drugs have hitherto shed but a dim and scanty light on the actual mode and nature of their efficacy. It is almost easier and shorter at the present day to enumerate the maladies in which iodine and its preparations are not ordered than those in which they are employed. This state of affairs is aptly illustrated in the text-book of Nothnagel-Rosbach: "When the physician is at a loss what to do, he prescribes the iodide of potassium." Only a year or so ago the medical world received with surprise the authentic report of an entirely new pathological field for the curative power of iodide of potassium (*Progrès Médical*, October 4, 1884), Prof. Fournier, of Lille, publishing a case of genuine tubercular lupus which was cured solely by this drug.

Still, in spite of the uncertainty and even confusion which exists in our knowledge of the therapeutic virtues of the iodides, clinical experience has well established their high value in a number of morbid processes, among which deserve to be especially mentioned syphilis, hypertrophy of the thyroid body, scrofulosis, gout, alterations of the aorta and great vessels, asthma, chronic bronchitis, and albuminuria.

If, however, experience has taught us numerous indications for the employment of iodides, it has given us no insight into their *modus operandi*; we are, in one word, very rich in empirical facts, but very poor in rational notions as to these important remedies.

Regarded by some therapeutists as moderating agents of nutrition, by others as stimulants of the same, the iodides have in turn been accused of producing obesity and reducing it, of augmenting diuresis and diminishing it, of increasing the elimination of urea and decreasing it again. This conflict of contradictory opinions compels us to appreciate the thorough and strictly scientific study of Dr. Eugène-Louis Duchesne (Paris, Inaugural Essay, 1885) on the action and elimination of iodides, which we hereby present in its essential features to the readers of the THERAPEUTIC GAZETTE.

I. ACTION OF IODIDES ON DIURESIS.

Iodide of Potassium was administered in fifteen cases in doses varying from $7\frac{1}{2}$ to 75 grs., and for a period of two to thirteen days, and gave the following results: In seven cases the urine was noticed to be increased slightly (2 to 8 oz.), and in one case greatly (30 to 34 oz.). In seven cases a slight diminution of the urine was observed during the period of the administration of the drug (2 to 7 oz.).

These variations move between such restrained limits and show such direct oppositions, that we are forced to assume that they are wholly independent of the influence of the drug.

Iodide of Sodium.—This drug was administered in one case in doses of 60 grs. *pro die* for a period of nine days, with the following results:

The urine increased 2 oz. during the period of administration; in another case, where 30 grs. were given for six days, a diminution of 22 oz. was observed. During six days following upon the cessation of the drug, the diminution of urine amounted to one quart. It is hard to draw any definite conclusions from these contradictory observations.

Iodide of Calcium.—In two cases where this drug was administered in daily doses of 30 and 60 grs. respectively for a period of six days, a diminution of 5 to 6 oz. during the period of administration and during the following period was noted. We know, then, that the iodide of calcium does not increase urination, but rather appears to diminish it.

Iodide of Ammonium.—This drug administered in doses of 45 grs. daily for six days pro-

duced an augmentation of 4 oz. of the urine for the first three days of administration. During the fifteen days following upon the cessation of the drug, this diminution amounted to 14 oz. In another case, where 15 grs. was given for nine days, an increase of 24 oz. during the first four days, and a diminution of $5\frac{1}{2}$ oz. during the five last days, was noticed. During the five days following upon the cessation of the drug the diminution amounted to 8 oz.

These two results go to show that iodide of ammonium augments slightly diuresis during the first few days of its administration, and decreases it later.

Polyiodides (KI, NaI, CaI, NH_4I).—In one case where the polyiodides were given for five days in equal and progressive doses of 15 to 75 grs., the urine decreased 20 oz. during the period of administration, and increased 4 oz. during the following five days. In a second similar case a diminution of $3\frac{1}{2}$ oz. during the period of administration, and an increase of 39 oz. during eight following days, took place.

The combination of iodides appears thus to act inversely as the iodides alone,—viz., to diminish diuresis at the end of the administration of the drug, and to increase it during the days following upon the cessation of the drug.

Tincture of Iodine.—In five cases where the tincture of iodine was exhibited in progressive doses of 8 to 28 gtt. for a period of five to fourteen days, the urine increased in every case (excepting one) $4\frac{1}{2}$ to 26 oz. during the period of administration. In the six days following in all cases (excepting two) a diminution of 10 to 28 oz. was observed. Hence we learn that the tincture of iodine increases urination at first, and then after cessation of the drug leads to a diminution of the urinary quantity.

II. ACTION OF IODIDES ON UREA.

Iodide of Potassium.—Under the influence of this drug urea was found to increase. This increase persisted, and even grew during ten or fifteen days following upon the cessation of the drug. These variations, though, are not great, from 30 to 45 grs. usually; they never exceed 120 grs.: In one case only the enormous figure of 210 grs. was reached. The dose, the mode of administration, and its duration, did not influence in any way these variations.

Iodide of Sodium.—This drug given in a comparatively large dose (60 grs.) produced a temporary increase of urea, which was soon

followed by a notable decrease, lasting for several weeks after the cessation of the drug, and amounting to the enormous figure of fifty per cent.

Iodide of Calcium lowered quite appreciably the figure of the ureic excretion even for a period of two weeks after cessation of the drug.

Iodide of Ammonium raised the secretion of urea at the end of the administration of the drug, and lowered it during the following eight or ten days.

Polyiodides were found to decrease the excretion of urea during their administration, and to raise it during the period following upon the cessation of the drug.

Tincture of Iodine.—Out of five cases in which the tincture was given, our author records an augmentation of urea in four cases during the period of administration and during the following three days. His conclusion as to the effect of the tincture of iodine was that the latter had a varying effect upon nutrition as to the exhibited dose; in a dose of 16 gtt. and exhibited for a period of about a week, the tincture was found to exert a decidedly favorable effect upon the general nutrition. If, however, this dose be exceeded and the period of administration prolonged, the reverse condition—viz., a notable depression of nutrition—took place.

Action of Iodides on Uric Acid.—The iodides of potassium and calcium were found to slightly increase the excretion of uric acid.

The iodide of ammonium produced a considerable augmentation of the uric acid excretion, while the polyiodides lowered the same.

At the conclusion of his study Dr. Duchesne arrives at numerous interesting results as to the action of the iodides on nutrition and their mode of elimination, which we shall briefly refer to.

The iodides have but a slight action on diuresis.

Their influence is marked by a slight increase of the urinary excretion during the period of administration of the drug, and at times during the first few days of this period only. This increase is soon followed by a decrease, which persists for ten to fourteen days after discontinuance of the drug. Among the salts of iodine, the iodide of potassium showed the feeblest action in this respect.

The iodide of ammonium and the tincture of iodine act alike on the urinary excretion, increasing it during the period of administration, and reducing it immediately after cessation of the drugs.

The elimination of nitrogenous matters (urea and uric acid) is modified by both the salts and the tincture of iodine, though the various preparations do not act alike. Iodide of potassium augments the ureic excretion during the period of administration, and during the following ten to fourteen days. This augmentation, which is always 30 to 45 grs. daily, may amount to 105 to 120 grs. (exceptionally to 225 grs.). The tincture of iodine acts as the iodide of potassium, but more energetically.

All the preparations of iodine favor likewise the elimination of uric acid during and after the period of administration. Their association, however, and the tincture produce the opposite result. During and after their administration the uric acid elimination is decreased.

These observations show the impossibility of considering the iodides *en masse* either as stimulants or depressants of nutrition, as some favor the elimination of nitrogenous matters, as the tincture of iodine and the iodide of potassium, and others retard this elimination, as the iodides of sodium and calcium.

Therapeutically, we infer from these facts that, wherever an energetic action upon nutrition is intended by intensifying the process of nitrogenous elimination, the potash combinations, or still better the metallic salt, recommend themselves. Such indications would arise in all maladies attended by a weakened nutrition, such as stone in the bladder, gout, rheumatism, and others.

BISMUTH PREPARATIONS.

THE great difficulty which in the past has attended the therapeutic use of the salts of bismuth in large quantities has been their proneness to contain arsenic. We well remember having produced severe arsenical poisoning by the administration of a preparation of bismuth which had been made by one of the largest and most reliable chemical establishments in the United States. This liability to arsenical contamination grew out of the fact that the only bismuth ores formerly in use were those of central Europe, all of which contain arsenic in abundance. Since the discovery of ores of bismuth in South America, which are free from arsenic, the practitioner need not fear to use this drug in very large doses.

There are one or two therapeutic points in regard to the salts of bismuth which it has

seemed worth while to call attention to. In the first place we hardly think that the bismuth preparations are employed as frequently as local remedies in inflammations of the mucous membranes as they deserve to be. They seem to us to be distinctly sedative, and at the same time slightly astringent, and may be used freely in the most acute stages of mucous inflammation. Thus, in the beginning of an acute nasal catarrh bismuth may be blown by means of a quill freely into the nostrils, often with great relief. If 5 grains of the carbonate of sodium be added to 2 drachms of the bismuth it will often be found serviceable. In gonorrhœa, during the most acute stage, injections containing 20 to 40 grains of bismuth suspended by means of some mucilage and repeated every two or three hours, sometimes act most advantageously.

As is universally recognized, these salts of bismuth are of great value in all gastric or intestinal irritations. When the stomach itself is affected, the bismuth should be given just before or immediately after the meal; the doses are not less than ten grains, the object being, of course, to have the bismuth retained in the stomach and brought in contact with the mucous membrane of the stomach as thoroughly as possible. In many cases it would be better to give the bismuth a half-hour before the meal. When it is desired to influence the mucous membrane of the intestines the bismuth must be given in much larger doses, 20 grains to a drachm; but especially is it desirable that it be administered about two hours after eating, when the contents of the stomach are rapidly passing into the intestines, in order that the bismuth may be hurried through the stomach as rapidly as possible and reach the intestines in an unaltered condition.

The remarks which we have been making refer to the insoluble preparations of bismuth,—the subnitrate and the subcarbonate,—which do not in any way differ from one another in their relations to the human organism. The soluble ammonio-citrate of bismuth is a very astringent and decidedly irritant remedy which, in our practice, has failed to prove itself possessed of any special value.

AN ABUSE OF VIVISECTION, BUT NOT BY PHYSIOLOGISTS.

AS our readers well know, we have taken occasion from time to time to protest against the false statements and the ranting rhetoric of antivivisection literature. It is to our mind

a great pity that so much of energy and so much of humanity should by its misdirection do evil rather than good. We sympathize most heartily with all properly directed efforts to reduce the amount of animal suffering in the world, and we would therefore suggest that our readers should call the attention of the various societies for the prevention of cruelty to animals and of humane individuals to the practical vivisections which are performed in private and public slaughter-houses in all portions of these United States with thoughtless or reckless brutality.

The slaughtering of animals is of course necessary; but death should be inflicted with as little pain to the animal as possible. When the throat of a sheep or a calf is cut, some minutes of psychical and physical suffering must ensue; since, even if both carotids be thoroughly divided, the vertebral arteries will suffice to supply enough blood to maintain more or less complete consciousness. Pithing of the sheep or of a calf would be a very simple operation, and would in no wise interfere with the free bleeding if the throat was cut immediately.

In the case of cattle, pithing is usually impracticable; and shooting, which is practised, we believe, in Chicago, is liable to cause serious accident. A properly-directed blow, given with sufficient force upon the front of the head below the horns, will cause an instantaneous loss of consciousness, and affords, unless under exceptional circumstances, the best means of killing. The difficulty is that the blows are frequently so bunglingly given that they have to be repeated time and again.

A recent inspection of the large building which, under the control of the Pennsylvania Railroad, constitutes the chief abattoir of Philadelphia, led to the witnessing of the sickening procedures there indulged in. Driven into open pens in crowds, maddened or cowed, according to the individual disposition, by the sight of their stricken comrades and the surroundings of death and blood, the unfortunate brutes, one by one, received the fatal hammer. Occasionally a deftly-delivered blow would cause the animal to fall paralyzed in all its nerve-functions; more often two, three, four, five, or even six times would the stroke have to be given, the animal falling to his knees, struggling up, trying to crowd his way among his fellows, only at last to perish. Then again, even when the steer had fallen unconscious, often was so long a time allowed to elapse before cutting the throat that the beast would regain sufficient power

to feel, and sometimes even to get upon his feet.

A little of the eloquence displayed at a late meeting of the Antivivisection Society by the learned counsel of the Pennsylvania Railroad, whose knowledge of law, we trust, is as great as his ignorance of physiology and its needs, might be usefully employed in the furtherance of abattoir reform.

THE GALVANO-CAUTERY AS AN EFFECTUAL TREATMENT OF DIPHTHERIA.

THAT all therapeutic interferences at present employed in diphtheria play little more than a palliative rôle, without in any way modifying the diphtheric process itself, is unfortunately an indisputable fact with all clinicians and practitioners. To look for new remedies of the vegetable or mineral kingdom, or the products of the chemical laboratory, which might possibly exert a specific, or at least a salutary, influence over the affection, must at last appear a fruitless endeavor. Drugs do not and cannot cure diphtheria, and other measures must be thought of, unless we wish to abandon our patients wholly to the mercy of this dreaded foe. Almost simultaneously, and certainly independently of each other, the report of the successful exhibition of a new remedial procedure, viz., the galvano-cautery, comes to us from two different quarters. Dr. Bloebaum presented his experience with the galvano-cautery in diphtheria in a recent number of the *Deutsche Medicinal Zeitung* (p. 973, 1885), and expresses his unqualified satisfaction with the results obtained, while in the *Rivista Venet.* of November, 1885, we find a similar eulogy of this treatment by Dr. Tedeschi (*Comunicazione Preventiva del Dott. v. Tedeschi di Trieste*).

These authors declare that the application of the galvano-cautery does not produce the slightest pain, as the diphtheritic membrane is of course void of sensibility. At the mere touch of the glowing wire the membrane rolls up and falls off. Tedeschi emphasizes the fact that the once cauterized portion never again assumes a diphtheritic nature, and the application forms at the same time a positive check to the extension of the process over the neighboring parts. After the application of the cautery the fever is found to be sinking, and frequently to wholly disappear after two to four hours. At the same time the glandular swelling on the neck and the œdema of this region are decreasing.

The scab resulting from the cauterization falls off in eight to fourteen days, and nearly always with ample suppuration. In the first couple of hours after the application ice is found to be a useful means to limit the inflammation; later, injections of aqueous vapor are indicated to favor a rapid dissolution of the scab. Irrigations with lime-water proved a useful adjuvant to this treatment.

Unfortunately, our author has not stated how many cases have been treated by this application of the cautery. But in the face of our present therapeutic impotency in diphtheria, the method deserves earnest but cautious trial. In conclusion, we recall that the galvano-cautery is not an entirely new application in the treatment of diphtheria, but has as early as in 1857 been recommended by French military surgeons in a communication to the *Union Médicale*.

THE SYPHILIS-BACILLI.

THE present status of our knowledge concerning the etiological aspects of syphilis is less satisfactory than at any time before. The consciousness that a certain scientific topic is as yet unknown to us is by no means a deplorable one, for certain things in science do not appear destined to ever become elucidated to the human mind, and, besides, what is unknown to-day may be known to-morrow. It is a far more unfortunate state of affairs if some hitherto obscure subject is suddenly explained by an ingenious theory or a brilliant discovery, which is again soon objected to and refuted from numerous quarters. In the former instance we know at least that we don't know anything, while in the latter we are deprived even of this hold. These views apply precisely to our present state of knowledge regarding the etiological factors of numerous specific diseases, especially tuberculosis, cholera, and syphilis. The vacuum existing in our knowledge of the causative agents of these affections had scarcely been filled by the discovery and demonstration of specific microbes, when their specific nature was disclaimed, rejected, and disproven. True, these objections are again refuted by the original discoverers, but the practising physician, who cannot spare the time for complicated staining and microscopic work, is left wholly in doubt and ignorance.

Lustgarten's discovery of specific syphilis-bacilli and their demonstration at the medical congress in Wiesbaden meet the same fate as

has been witnessed in the instance of Koch's tuberculosis and cholera-bacilli: its specific character is questioned by authoritative observers.

We have before us two recent papers (*Centralbl. für Med. Wiss.*, January 2, 1886) by Cornil and Dutrelepon, both noted pathologists, who discuss the subject of Lustgarten's bacilli in an able and impartial manner.

Cornil refers to the works of Alivarez and Pavel, who found in the preputial smegma, in the vulva and anal orifice, a bacillus which closely corresponds to the microbe discovered by Lustgarten. These observers failed to detect the bacillus in eight syphilitic excrescences, in spite of many sections and strict observations of Lustgarten's instructions, while out of fifty-five cases of syphilitic secretions it was found thirty-three times. Cornil advances the following theses:

(1) In several normal secretions of the body a bacillus exists which has heretofore been unknown.

(2) This bacillus is, regarding its form and functional properties, identical with the microbe described by Lustgarten.

(3) It is possible that both bacilli are actually one and the same.

(4) The bacillus occurring in the ordinary secretions resembles in form the bacillus tuberculosis, and shows a certain behavior as to coloration which is only found in the bacillus of tuberculosis and leprosy.

(5) From the bacillus tuberculosis this microbe differs, besides in its smaller size and its less granular appearance, by its lesser resistance against alcohol after the coloration with fuchsin and the treatment with nitric acid, nor can it be stained by Ehrlich's method with methylviolet.

(6) These facts deserve to be considered if we intend to establish a diagnosis on the microscopic inspection of secretions.

Cornil concludes his paper by remarking that the works of Alivarez and Pavel are still incomplete, as no cultures of their microbe have as yet been made; hence their pathogenetic nature is of course an open question. But this is equally questionable in the case of Lustgarten's bacilli, as no cultures of it have yet been made.

Dutrelepon communicates his continued investigations of the syphilis-bacilli. He found them in nine cases of sclerosis, in one of a broad condyloma of the external labiæ and anus, viz., in five papules, one gumma, and in the secretions of mucous patches and indurated ulcers of the upper lip.

All attempts of making a culture have proved futile.

These observations show that it is as yet impossible to either wholly accept or wholly reject the specific nature of the microbes detected and described by Lustgarten, and that further investigations have to be made in this direction.

LEAD-POISONING.

IN a recent editorial we called attention to the fact that the absence of a blue line upon the gums is no proof that the patient is not suffering from lead-poisoning. A case which has recently occurred in the practice of Dr. Wood, in Philadelphia, seems to us of such great interest, as showing the necessity of the practitioner always being on his guard in regard to this form of poisoning, that we notice it editorially. A gentleman in the centre of Pennsylvania was taken ill with very obscure nervous symptoms which developed after domestic and business troubles, and which appear to have been attributed by his various medical advisers to overwork and overworry.

To show the possible obscurity of lead-poisoning and the difficulty of recognizing it, it is allowable to state that this victim was first under the care of his local practitioner; afterwards for a period under that of one of the most eminent Philadelphia professors; then, under the advice of an eminent neurologist of New York, went abroad in charge of a young physician. Subsequently he came to Philadelphia, and was for some weeks under the care of a physician of world-wide renown. During all these months the nature of the case was not suspected.

The chief symptom in the man's case was, as it had been all along, a peculiar insomnia of the most aggravated type, so that the patient for many months had not consciously slept two consecutive hours except under the influence of very large doses of narcotics. So soon as he would get into bed he would be seized with a feeling of unrest associated with a peculiar irritation of the skin, with formications and itchings, which affected not only the skin, but also the mucous membranes, taking at times the form of burning pains along the urethra. There was also a feeling as though the man must walk, so that he would be forced in a few minutes out of bed, and would pass the whole night pacing up and down the floor. Night after night the patient had been driven backwards and forwards until he had fallen, on more than one occa-

sion, upon the floor from sheer exhaustion. In several places he had been asked to leave boarding-houses and even large hotels on account of the disturbance produced by his nocturnal habits. There was no palsy, no failure of mental power, no other symptoms present than those which we have described. In examining the case Dr. Wood first came to the conclusion that the insomnia was probably secondary, and produced by the peripheral nervous disturbance. It is a fact that persistent universal peripheral irritations giving rise to pruritic sensations, when not connected with the change of life in women, are, in the great majority of cases, due to the presence of some toxic agent. Such a poison in a large proportion of the cases is gouty, but there was in the present case no gouty history, and no gouty symptoms other than the peripheral irritation. This led to the suspicion that possibly the poisoning was plumbic; but on examining the mouth no blue line was discovered upon the gums. In going over the history, however, the patient stated that at one time he suffered from horrible abdominal pains, which he affirmed usually came on shortly after eating, and were often unbearable. This condition lasted for some weeks, during which time the patient was excessively costive, the stools being scybalous and light of color. The next inquiry was as to the water-supply of the patient's home, and it was found that the gentleman occupied a country mansion supplied with, as he stated, "beautifully pure water from a mountain spring running through metal pipes."

With this positive history and the negative facts that no known nervous disease conforms in its type with the symptoms present in the case, Dr. Wood believed that the diagnosis of lead-poisoning was justified. Chemical examination of the water used in the house of the patient showed that it contained a large proportion of lead; further, although the patient had been away from home about a month, and had not been using the water containing lead, Dr. Marshall, of the University Chemical Laboratory, found lead in the urine. The process employed by Dr. Marshall was to boil three litres of urine down to about two ounces, adding nitric acid until the organic matters were thoroughly charred, then suspending in the liquid two pieces of platinum foil respectively connected with the positive and negative poles of the battery. After the current had been passed for an hour or two a distinct discoloration of the platinum connected with the negative pole of the battery was ob-

served. This platinum was then heated in diluted nitric acid, and through the solution thus obtained sulphuretted hydrogen was passed. The black precipitate which formed was collected, and when reduced by the flame of a blow-pipe on a piece of carbon, yielded metallic lead.

A NEW DISINFECTANT.

ANY novel facts in regard to disinfectants are of such importance that we give prominence by putting into our editorial columns the results of some researches made by Dr. A. C. Abbott in the Biological Laboratory of the Johns Hopkins University (*Medical News*, January 9, 1886). If, as it is claimed, the stannous chloride is free from poisonous properties, it ought to be used very largely as a disinfectant. Dr. Abbott finds that the stannous chloride comes far short in the germicide value of mercurio-chloride; but when in contact with spores in decomposing organic matter, kills them at one per cent. after an exposure of two hours, and that it failed to disinfect the mass when present in 0.8 per cent. after the same length of time. Comparing these figures with those indicating the potency of zinc chloride, copper sulphate, zinc sulphate, and ferric sulphate, which are the salts most generally used for the purpose of disinfection, we find the first of these, zinc chloride, to be active in five per cent., and inactive when present in 2.5 per cent.; while the last three—copper sulphate, zinc sulphate, and ferric sulphate—we find to be inefficient respectively in twenty per cent., forty per cent., and in saturation. These facts, taken in conjunction with the moderate cost of stannous chloride, and its entire inactivity on lead pipes, are sufficient to indicate a large field of utility for this compound.

IN our last issue, the author's name of "Notes on Brucine" should have been Dr. Ralph W. Seiss, instead of Ralph W. Zeiss.

Reports on Therapeutic Progress.

ON PNEUMO-BULBARY ASTHMA.

The affection known under the name of asthma has seen many a strange change before it could maintain a firm position in the therapeutic science. In the early days of medical knowledge "asthma" meant all forms of dyspnoea. Galen and Celsus, for example,

regarded asthma, dyspnoea, and orthopnoea all as one single pathological group.

Sydenham recognized three various forms, Willis and Cullen added each three new categories, and Sauvages finally described eighteen. This modification of different varieties of asthma would have been infinitely continued unless the light of pathological anatomy had demonstrated their true character as mere phenomena dependent upon various morbid alterations of the heart, the aorta, and the lungs.

Later a serious and remarkable reaction took place, which reached its culmination by Rostan's proscription of this affection in 1821, who simply eradicated its name from the clinical nomenclature in favor of affections of the aorta.

Laennec, again, created a third and new phase for this affection. Noticing that some of his patients were seized with nocturnal paroxysms of dyspnoea, he constructed for these cases the term of "essential asthma." This is the "petit asthme du soir," which has still a singular hold upon the professional mind. If found to deviate, however, from the ordinary type, it is no longer recognized, and its doom is complete if it is found to be associated—as is, in fact, always the case—with emphysematous and catarrhal conditions. Hence in our hospital-lists we read only of emphysema and catarrh. Louis established the autonomy of the emphysematous process, while Bean in his remarkable paper on asthma referred all pertinent symptoms to the bronchial catarrh. For a large number of cases this view was correct, especially in opposition to the so-called "nervists," who regarded the whistling respiration solely as the characteristic, and the bronchial cramp as the cause, of asthma.

PROF. G. SÉE, in the third volume of his still unpublished *Médecine Clinique*, proposes to establish the affection upon its true clinical basis, and to present the clinical proofs that no asthma exists without dilatation of the air-vesicles and a fibrinous exudation, that frequently a genuine catarrh coexists, and that the "petit asthme essentiel nocturne" in the course of time appears also during the day. In this connection he endeavors to show how the lungs are invariably expanded to the utmost, until they form an inelastic sac, which is designated as emphysematous, and that finally the asthmatic catarrh becomes unimpeachable.

Dr. Sée believes that asthma forms a triology, having a nervous, a mechanical (alveolar), and secretory (bronchial) basis.

Definition—Nervous Origin.—Every dyspnoea dependent upon an alteration of any organ is not a true asthma; no matter whether this dyspnoea is accompanied by emphysema or not, it is nothing more than a symptom; a pseudo-asthma. The cardiac asthma is the type for this category.

Asthma can only be regarded as genuine and as an independent affection when its nervous origin is established. Asthma, then, is a neurosis of extreme importance, chronic, and invariably marked by paroxysms presenting a definite mechanism, a precise character, and a fixed localization. The actual seat of this neurosis is the medulla oblongata and the respiratory centre in it; its cause, an inherited or acquired or heightened reflex irritability of this organ. As exciting causes of the paroxysms we must assume irritations radiating from the pneumogastric or the peripheral nerves, such as the trifacial, while as effect we have the activity in the motor nerves of the inspiratory muscles, chiefly the diaphragm. We therefore have to deal in asthma with a permanent neurosis of the medullary bulb, proceeding from an irritation chiefly in the vagus, and resulting in a tetanoid contraction of the diaphragm.

Experimental Argument.—In its character of neurosis asthma is a domain of experimental medicine; the experiment, however, can only be viewed as conclusive if all phenomena, and all functional interference observed in patients, are reproduced by it. If physiology shows us an artificial dyspnoea with expanded pulmonary alveoli and a bronchial catarrh, we have the true experimental asthma; if, however, one of these sequelæ be wanting, we would have only a fragment of human pathology and an imperfect asthma. This has been done recently; first the convulsive dyspnoea has been produced, then a dyspnoea with pulmonary ectasis (ectasis pulmonum), but the artificial production of the catarrh has not yet been accomplished.

I. *Artificial Broncho-Spasmodic Dyspnoea.*—When Laennec first recognized that form of nervous asthma, which can be termed a limited one, as he excluded every material lesion of the lung, especially catarrh and emphysema, the convulsive contraction of the bronchial muscles (discovered by Reisseisen) was universally looked upon as the causative agency of the dyspnoea. This theory, aided by experimental physiology, held long supreme sway, and is still held by many authors.

II. *Bulbo-Phrenic Dyspnoea.*—Meanwhile, Wintrich advanced his objections against

this theory, and urged especially that the bronchial spasm could not produce nor explain the enormous alveolar distention, the expansion of the lungs far beyond their normal limits,—in one word, the emphysematous dilatation which invariably attends the asthmatic paroxysm. As long as nineteen years ago Dr. Sée endeavored to show that not the bronchial muscles, but the sensory fibres of the vagus, formed the origin of the paroxysm, and that transferred to the medulla oblongata and the motor inspiratory muscles, the phrenic nerves were ultimately reached. And as the result of this reflex phenomenon we have the tetanoid contraction of the diaphragm, the prolongation of the chest, and the dilatation of the lungs.

All clinicians excepting Bamberger, in Vienna, upheld this view faithfully, though it was fiercely attacked by many. Riegel, one of its strongest supporters, has recently, in an experimental essay, declared his error and demonstrated the neurotic nature of asthma.

III. *Artificial Catarrh.*—These two main points, then, the dyspnoea and alveolar dilatation, have been furnished by the experimental science, and there only remains to show how the bronchial secretion originates.

Résumé.—The nature of asthma, then, is established on a neurotic basis, and the affection is a pneumo-bulbary, or, better, a pneumo-bulbo-phrenic one. There will be different types only remaining: if the nervous element predominates we will have the nervous asthma in the special sense; if the emphysema is pronounced, the alveolar or emphysematous asthma; and, lastly, if the bronchial catarrh is conspicuous, we will have the bronchial asthma.

Difference between the Neurotic and Pseudo-asthma.—A large number of morbid conditions may give rise to paroxysms which simulate the genuine asthmatic attack in all respects but differ wholly in their origin. The principal pseudoasthmatic paroxysms are cardiac, uræmic, tuberculo-pulmonary, laryngeal, and cerebro-spinal. In all these cases a thorough examination will reveal the existence of a primary organic lesion, hence a condition which can be distinctly separated from a neurosis.

Quantity and Appearance of the Expectoration.—A certain number of cases show no sputum whatever. Usually the expectoration is scanty, consists of small, hard fragments of a pale gray and semitransparent color. We find in them two main elements, viz., peculiar crystals and spiral threads.

I. *The so-called Asthma-Crystals.*—In these fragments, and in the middle of the spirals or the pus-cells, we find octahedral crystals, which have been long ago demonstrated by Charcot in the leucæmic spleen and in the medulla of bones. These crystals, apparently composed of phosphates and an organic basis, play, according to Leyden, a very important rôle : they are said to irritate the bronchial mucous membrane, and to thus produce the asthmatic paroxysm by reflex action. After the attack they disappear until their regeneration gives rise to another one. Levy* has confirmed the regular appearance of these crystals in twenty-six cases observed by him.

Objections.—The above-mentioned observer, however, found these crystals also in the sputum of patients who, at the time, were not under the influence of a paroxysm. The crystals may also appear in fibrinous bronchitis, in acute bronchitis, in pulmonary phthisis, and in bronchial catarrh, without a trace of asthma. Consequently it is not certain whether these crystals actually produce the attack of asthma, which, according to Levy, is an epithelial catarrh. According to Ungar,† these crystals are not all pathogenetic, but are generated in the sputum outside of the body.

II. *Spiral Bronchial Secretion.*—According to Unger and Curschmann,‡ the gray or yellowish spiral threads to be found in the sputum are the actual exciting causes of the paroxysm. They are usually empty, contain air, and are in their longitudinal axis traversed by a shining central thread, which consists of finer spirals and round cylindrical cells. Their origin cannot be doubtful ; they are an inflammatory exudation of the ultimate bronchioles. This shows that we have to deal with an exudative bronchiolitis. According to Curschmann, bronchiolitis is a chronic affection, observable in every phase of life, frequently combined with a chronic catarrh of the large bronchi, and producing a more or less intense expiratory dyspnoea, with pneumatosis of the lungs. This is the cause of the secondary nervous asthma. The primary nervous asthma is of rare occurrence.

Objection.—Vierordt|| found these identical crystals in the sputum of a patient on the seventh day of a fibrinous pneumonia ; on the eighteenth day they had disappeared. V. Jaksch, Vincenzo, and Pel¶ found them like-

wise in fibrinous pneumonia, and Curschmann observed them in twenty-seven cases of pneumonia four times and twelve times simultaneously with fibrinous coagula, and not knowing what to do with these crystals, declared all those pneumonic patients as asthma-candidates !

Résumé.—These discussions and observations show that the bronchial secretion of asthma differs from the ordinary catarrh by the tenacity, scantiness, spiral fibres, and the frequent coincident appearance of the Charcot-Leyden crystals in the sputum. But these elements do not own any pathogenetic character, as they are also to be met with in other broncho-pneumonic affections without a trace of asthma. Hence the theory that any elements found in the sputum of asthmatic patients are the cause of the paroxysm is no longer tenable.

(To be concluded in the next number.)

HYOSCINE HYDROBROMATE.

DR. HENRY M. WETHERILL has been employing hyoscine hydrobromate as an hypnotic for the past six months in the Pennsylvania Hospital for the Insane, and he publishes the results of his experience in the *Med. Times*, December 26, 1885. He used a formula containing 1 grain of the hydrobromate of hyoscine, 9 fluidrachms of distilled water, and a drachm of alcohol, every 10 minims of this solution containing $\frac{1}{10}$ of a grain of hyoscine. As a hypnotic, the usual range of dose is from $\frac{1}{120}$ to $\frac{1}{60}$ of a grain given at bedtime, preferably by the mouth ; very frequently a less dose than gr. $\frac{1}{120}$ will be sufficient ; gr. $\frac{1}{60}$ has often acted better in insomnia than has a larger quantity. It is very seldom necessary to repeat the dose ; and another very decided advantage possessed by hyoscine over hyoscyamine is that small doses can be continued for a long time without increase ; whereas the patient soon tolerates small and then moderate quantities of hyoscyamine, and finally resists even very large doses of it. Dr. Wetherill has given hyoscine a thorough trial in the insomnia occurring in the course of acute delirious mania, and with marked success, having succeeded, when all the usual modes of treatment had proved inadequate, in securing for the patient from six to ten hours of quiet sleep nightly for the past nine weeks, with but four or five exceptions, giving but one dose in every twenty-four hours, at bedtime, the amount ranging from gr. $\frac{1}{120}$ to

* Centralblatt, 1885. No. 14.

† Congress f. innere Medicin, 1884.

‡ Deutsch. Archiv f. Kl. Med., 1884. Nos. 1 and 2.

|| Berl. Kl. Woch., 1884, p. 13.

¶ Centralbl. f. Kl. Med., 1885. No. 30.

$\frac{1}{16}$. The insomnia in these cases is one of their chief elements of danger. If it is possible to give such a case a fair amount of sleep and of nourishment in a concentrated form, the probability of a favorable issue might be entertained. In the insomnia of agitated melancholia, of the morphine habit, of alcoholism, of acute mania, of neurasthenia, of chronic mental disorder, with habitual wakefulness and motor activity, and in those confirmed cases of insomnia from unascertained cause which usually prove so obnoxious to treatment, hyoscine has been found to answer a very good purpose. It does not invariably succeed; but the failures have been very exceptional. In many instances the chronic insomniac habit has been broken so as to permit of the withdrawal of the hypnotic. It is a severe test of the value of any hypnotic to administer it in daytime, and the drug under consideration has been found to act very well even under this condition. It seems scarcely necessary to refer to the unsatisfactory and often disappointing action of the hypnotics which are now in general use, and it would seem as though this remedy is the one for which rational therapists have waited for so long a time.

Now, as to its usefulness as a general sedative, Dr. Wetherill claims that he has had results which justify the assertion that it is the very best means at present at our disposal for calming the motor excitement of acute and chronic mental disorders in their talkative, active, noisy, destructive, or violent phases. In this class of cases the range of doses may sometimes have to be greater than in the treatment of insomnia: from gr. $\frac{1}{16}$ to gr. $\frac{1}{8}$. He has seldom been obliged to give so much as gr. $\frac{1}{8}$, and has rarely had to give more than one dose in twenty-four hours. As an occasional exception, a patient has been found whose excitement has successfully resisted a full dose; but it must be remembered that some cases of chronic mental excitement have been dosed with varying success through a period of years, until a peculiar condition of resistance to and toleration of remedies of this class has become established. Where a large number of excited patients are congregated, even though they may be classified with care, there are a few who seem to be the cause of most of the general disorder and confusion: reduce these few to a condition of comparative quiet, and the larger but less aggressive element remains tranquil.

The physiological effect of a full dose of hyoscine, say gr. $\frac{1}{8}$, is manifested within

twenty minutes. These are—brief, transitory bewilderment; marked interference with co-ordination; widely-dilated pupils; slow, regular, very full pulse; dryness of the throat; relaxation of the vocal cords; very slow, full respirations, sometimes becoming Cheyne-Stokes; marked suffusion of the face and of the general surface of the body; a slight rise in temperature; and free diaphoresis, which does not seem to restore normal temperature. There is general muscular relaxation and a sense of wretchedness. Sleep usually follows, which continues from one to five hours, if the dose is given in daytime and the patient is not put to bed. This amount, administered at night, would be followed by sleep lasting for eight or ten hours. The mydriatic effect is rather transient, but usually persists through an entire day. The pulse is slowed about twenty beats per minute, and this effect gradually wears away during eight or ten hours, and is often followed by a very variable period of pulse-acceleration, which seems to be simply a reactionary hastening of the pulse to restore the disturbed balance of the circulation. The normal rate of respiration is gradually restored through a period ranging from three to five hours.

The rise in temperature is not an invariable result, and is frequently small,—seldom exceeding one and a half degrees,—and the balance of temperature is usually restored within two or three hours. Dryness of the throat often persists through an entire day. Suffusion of the surface of the body is usually transitory. In moderate and in small doses the effect is, of course, proportionate to the amount employed; but the same general symptoms are present, and the patient is quieted accordingly. Interference with the appetite is sometimes observed. It does not seem to act upon the bowels nor upon the kidneys.

Hyoscine is not always well borne; occasionally the following symptoms have followed the use of a moderate dose: nausea, vomiting, anorexia, dysuria, syncope, with small, rapid, irregular pulse, and with symptoms of partial paralysis of the pneumogastriacs.

Is it best to give the remedy hypodermically or by the mouth? It acts almost immediately and in rather less dose by the former method; yet Dr. Wetherill prefers usually to give it by the mouth, as it acts very promptly, when taken into the stomach, even in very small doses, and this method offers no shock to an excited or timorous patient.

ON SYMPATHETIC OPHTHALMIA.

DEUTSCHMANN instituted a series of researches with the view to determine the pathogenesis of sympathetic ophthalmia (*Gräfe's Archiv*, xxxi. p. 277), and came to the conclusion that the inflammation was transferred from the affected to the healthy eye by way of the optic nerve and its investments, and that micro-organisms are the actual carriers of the infection. He succeeded by injecting the staphylococcus pyogenes albus into one eye in producing a sympathetic inflammation in the other. In five eyes extirpated a long while ago on account of sympathetic ophthalmia he found in the vitreous body numerous cocci and bacilli, and in four other eyes removed for the same cause he detected at once the staphylococcus pyogenes aureus and albus. Deutschmann does not believe that we have to deal in these cases with specific pathogenetic microbes, but that there exist a number of various micro-organisms in this affection which, according to growth and propagation, may serve to transfer the inflammation from the affected to the healthy eye.

A NEW GALACTAGOGUE.

At a recent Medical Congress, in Naples, PROFESSOR PROTA-GIURLEO called attention to the *Ditana digitifolia*, a Mexican plant, as possessing remarkable galactagogue properties (*Phar. Post*, November 28, 1885). He mentioned several cases reported in Italian journals in which the administration of an infusion (of what parts of the plant is not stated, nor the strength) to nursing women had exercised a marked influence upon the milk-glands, inducing a considerable secretion of milk, even in cases where it had been nearly or entirely suppressed. Ethereal tincture of the flowers of *Ditana digitifolia*, made into a kind of elixir with syrup, is said to have been brought out by an Italian pharmacist under the name of "galattofore." The flowers, and especially the stamens, are in addition credited with sudorific properties.

Professor Giurleo has also directed attention to the *Rhamnus alaternus* and *Ligustrum vulgare* as plants possessing properties antagonistic to those accredited by him to *Ditana digitifolia*. The property of *Rhamnus alaternus* in diminishing the secretion of milk was reported about forty years since, though since practically overlooked, and Professor Giurleo now states that he has found the *Ligustrum vulgare*, though so far removed

from it botanically, to possess exactly similar properties. The drug is said to be best administered as an infusion of 3 grammes (45 grs.) of leaves in 150 grammes (5 oz.) of water, twice in the course of twenty-four hours, this dose being repeated for several days.—*Pharm. Journ. and Trans.*, December 25, 1885.

ANTIPIRYN AND THALLINE.

The result of a long series of observations which were made at the clinic of Prof. Eichhorst, in Zurich, has been published in detailed form in Ziemssen's *Archiv für Klinische Medizin*, by DR. SARA WELT. In the following article will be given a short synopsis of the most important conclusions reached.

Antipyrin.—The number of cases consisted of 122 patients, of which 62 were males and 60 females. Among these were 88 cases of typhus abdominalis, 10 of pneumonia fibrinosa, 11 of phthisis pulmonum, 3 of erysipelas facie et capitis, 3 of rheumatismus articularis, 1 of rheumatismus muscularis, 2 of diphtheria faucium, 2 of endocarditis ulcerosa, 1 of variola, and 1 of metritis. The total number of single doses amounted to 1134. The largest quantity which was given any one patient in the course of the disease was 165 grammes (5½ oz.) within thirty days. During the commencement of the observations the author confined herself to the directions of Filehne, and prescribed 2 grammes (30 grs.) for each of the first two hours, and 1 gramme (15 grs.) for the third hour, provided the fever had not already abated. Vomiting was by no means rare, though this sometimes—not in the majority of cases—was prevented by adding opii 0.01 to 0.02 ($\frac{2}{10}$ to $\frac{3}{10}$ gr.) to the powder.

Soon, however, the author began to give antipyrin per rectum, and then ceased giving single doses as before mentioned, but chose a dose of such quantity as would suffice to cause complete apyrexia; that is, the object, generally speaking, was to determine during the first and second day what may be termed the individual dose of antipyrin which would bring about the above result. She began by prescribing 2 grammes of antipyrin, giving children but 1 gramme. Often a complete and prolonged effect was obtained by this. On the succeeding days the quantity was increased to 3, 4, and, if necessary, to 5 and 6 grammes. These last-named doses, however, were not frequent, but in one case a single dose of 8 and 10 grammes was given. The powder, dissolved in 50 grammes (nearly 2 oz.) of tepid water,

was injected by a small glass syringe into the rectum. No threatening symptom was ever observed from administering antipyrin in this manner. The relation of what may be termed the individual dose to this long course of observations was such that in twenty cases a complete effect was secured with 1 gramme of antipyrin. The temperature fell to and below 38° C. (100.4 F.) sixty-two times. An almost complete effect—by which is meant a fall in temperature to between 38° and 38.5° (100.4° to 101.3° F.)—was secured with 1 gramme of antipyrin nineteen times in eight cases. But it should be stated that doses of 1 gramme were almost exclusively given to children, and doubtlessly these frequent effects may be ascribed thereto, though doses of this quantity may suffice for adults.

Doses of 2 grammes secured complete effects, in seventy-two cases, four hundred and ninety times; almost complete effects, in thirty-three cases, seventy-one times. Doses of 3 grammes secured complete effects, in sixteen cases, fifty-three times; almost complete effects, in six cases, six times. Doses of 4 grammes secured complete effects, in twenty-six cases, seventy-four times; almost complete effects, in nine cases, fourteen times. Doses of 5 grammes secured complete effects, in five cases, sixteen times; almost complete effects, in two cases, three times. Doses of 6 grammes secured complete effects, in ten cases, nineteen times; almost complete effects, in one case, twice.

A dose of 8 grammes achieved an almost complete effect once in one case. A dose of 10 grammes resulted in a complete effect once during one case.

The last-named two doses were prescribed for a patient in the eighth month of pregnancy, suffering from pneumonia fibrinosa, without any disagreeable consequences. The movements of the child, which were very restless at times of fever, became very quiet, and it was noticed that whenever antipyrin was prescribed for gravid women it had a quieting influence upon the child's movements.

After two doses of 2 grammes each, complete effects were secured, in thirty-three cases, fifty-eight times; almost complete effects, in twelve cases, fourteen times.

After three doses of 2 grammes each, complete effects were secured in eleven cases, fourteen times; almost complete effects, in three cases, three times.

After four doses of 2 grammes each were obtained complete effects, in three cases, four times. After two doses of 4 grammes each, complete effects, in three cases, three times;

almost complete effects, in one case, once. Seventy single doses of antipyrin were without any effect.

Regarding the before-mentioned individual doses, it was noted that they may often vary for the individual. Persons whose condition responded promptly to small doses of antipyrin suddenly continued to have fever, in spite of taking the dose which had until then proven effectual. Dr. Welt particularly lays stress upon these observations in connection with patients suffering from erysipelas and pneumonia. As long as the anatomical process remained stationary the determined individual dose remained unchanged; as the disease progressed an increase in the quantity of antipyrin became necessary. Occasionally an antifebrile effect was not observed, in spite of very large doses.

Regarding the duration of the antifebrile effect of antipyrin, it was observed that this effect continued as much longer as the quantity of the individual dose required to abate the fever became larger. Dr. Welt frequently made this experiment: she gave patients whose individual dose had been determined double the quantity, and observed that in a large majority of cases the effect, especially in reference to its duration, was not only again as long, but frequently still longer.

Among one hundred and twenty-two patients for whom antipyrin was prescribed, the author noticed the exanthema following its use thirteen times, or 10.6 per cent. As to males and females, it was observed in the former six times, or 9.6 per cent., and in the latter seven times, or 11.6 per cent. With the exception of one case, it invariably followed with patients suffering from typhus abdominalis. Possibly patients suffering from gastro-duodenitis may have a tendency to exanthemata upon taking antipyrin. As a rule, a prolonged use of antipyrin was required to produce an exanthematous eruption; but in one case such an eruption broke out twelve hours after taking a dose of 6 grammes. It seems that women are more inclined to this exanthema than men.

Concerning the character of this exanthema, it was observed that in almost all cases it was a roseolous exanthematous efflorescence, very much like an urticaria. In three cases a hemorrhagic exanthema appeared, and Dr. Welt found that very small miliary, thickly-sown hemorrhages favored the inguinal region, and generally the flexor sides of the large joints of the body.

In the author's observations she found that

the eruptions of this exanthema took place without the patient suffering the least pain; and in the further course of the disease most of her patients did not complain of the exanthema, although in one case the patient experienced itching in the affected locality. In several cases she observed desquamation of the skin. Contrary to the experience of other observers, exanthema in the face was also noted. Sometimes the entire face was bloated; the rima palpebrarum reduced on account of œdema of the eyelids. In some cases the author noticed a heightened redness of the mucous membrane of the lips,—not so much of the mucous membrane of the cheeks,—so that it would suggest an antipyrin exanthema. Still, it seems that this occurs rarely. Likewise she found erythematous patches on the palmar surface of the hands and feet. Regarding the duration of the exanthema, it had a tendency to assume a subacute course. Only in two cases had the exanthema faded by the fourth day. Generally traces of it were found in the second week, and sometimes at the end of the second week.

In summing up the effect of antipyrin, Dr. Welt found that the temperature would begin falling immediately upon taking it, and continue to do so until normal temperature was reached. Not seldom it would fall to a subnormal degree. It was observed that the temperature would rise after taking antipyrin, and not begin to fall until after the lapse of half an hour. The pulse, however, does not keep step with the temperature. Sometimes it would remain unchanged, or become slightly less frequent. Sometimes a temporary increase in frequency would succeed the fall in temperature. It is almost a rule that even with determined individual doses of antipyrin the temperature may not only become normal, but subnormal, though no clearly defined cases of collapse were met with. During the fall in temperature she noticed at first a slight perspiration, which becomes more profuse, sometimes so much so that change of linen becomes necessary. Simultaneously a slight cyanosis makes its appearance on the back of the forearm and hands, which may become very intense.

Often the extremities were cold. The entire appearance of the patient doubtless resembled one of collapse, but the feeling of collapse was absent, nor could any loss of strength be determined.

In the recurrence of rising temperature of patients whose fever had abated the author observed six cases of chill,—almost always

chilliness, never a clearly-defined chill. Finally, there are no specific effects of antipyrin.

Briefly, then, according to her experience antipyrin is an excellent *symptomatic* remedy, but it is without influence on the disease itself.

Thalline.—Experiments with this new remedy were made on seventeen feverish patients, and Dr. Welt was soon convinced that, like Jaksch, and, later on, Alexander, she had found in thalline a powerful and generally effective febrifuge, because, among one hundred and forty-one doses, the febrile effect was wanting in but *three* patients. In the mode of administration she followed the directions of Jaksch. She usually began by giving the patient a dose of 0.25 (4 grs.) thalline, and continued giving the quantity hourly until the temperature became febrile. The largest dose was 1.5 grammes (22 grs.) within six hours. The general characteristics of the fall in temperature after the use of thalline resemble closely those noticed after the use of antipyrin,—usually first a fall in temperature, then profuse perspiration takes place, but not so profuse as after taking antipyrin. Likewise after the use of thalline at first an erythematous and then cyanotic discoloration of the skin was noted in the face and on the extremities. The author noticed frequently occurrence of chills upon the rise of the abated temperature. Their intensity varied: not rarely a severe chill took place which lasted over two hours. Among one hundred and forty-one single doses the occurrence of chills was observed seventeen times, or 12 per cent.; among eleven hundred and thirty-four single doses of antipyrin, six times, or 0.5 per cent. Vomiting was observed ten times, or 7.1 per cent., in comparison with antipyrin, among eleven hundred and thirty-four doses, one hundred and fifty-three times, or 13.5 per cent., and in this respect antipyrin is inferior to thalline. In one case, after using thalline, the urine, which at a high temperature had shown no traces of albumen, was not only more highly colored, but contained albumen, which did not disappear until thalline was stopped. This was not experienced in the use of antipyrin. Diarrhœa was frequently observed after the use of thalline. Shortly after the first doses the stools were of a striking watery character. This was not observed in connection with antipyrin; in fact, it was found that antipyrin had a kind of astringent effect. In reference to the frequency of the pulse, the author found not rarely that, as with antipyrin, the pulse became more frequent as the temper-

ature fell, soon, however, to conform more or less with the fall in temperature in the decrease of beats. In the occurrence of chills at the rise of the abated temperature thalline reminds one of kairine; but unlike kairine, inasmuch as the patients did not become uneasy; in fact, in spite of the chill, they were, without exception, not uncomfortable.

Therapeutically speaking, the author would place thalline between kairine and antipyrin, with more of the good qualities of antipyrin. Still, we cannot pronounce them equally good, because, though thalline may be a more effective remedy to reduce high temperature to the normal, its effect is not so lasting. Thalline can likewise only be regarded as a symptomatic remedy.

EXTERNAL USE OF LOBELIA INFLATA.

DR. V. N. REICHARD highly recommends the use of lobelia inflata (*Med. Times*, December 12, 1885) as a local application for indolent sores, chronic erysipelas, and especially in incised wounds, in which latter class of cases it acts as a hæmostatic and astringent. The mode of employment of lobelia for this purpose in cases of incised wounds, no matter how great the hemorrhage, provided, however, it does not require a ligature, is to bring the edges of the wound together, and to hold them for a few moments, while a pledget of cotton, wet with tincture of lobelia, is applied. Dr. Reichard says that the hemorrhage will then cease and the parts adhere, and, although lobelia may not be a germicide, it will so entirely close up a wound as to render it perfectly aseptic.

NUX VOMICA IN THE TREATMENT OF PROLAPSUS OF THE ANUS.

M. SCHWARTZ (*Les Nouveaux Remèdes*, December 1, 1885) has employed the extract of nux vomica with success for the last ten years in the treatment of prolapsus of the rectum, not only in children, but even in adults in whom this condition had been neglected and had passed to the chronic stage. He administers it in a dose of $\frac{3}{4}$ to 1 grain dissolved in an ordinary tumblerful of water, of which 7, 8, or 10 drops are taken every four hours. He claims that in twenty-four hours the prolapsus will have disappeared. For children the dose is 5 drops, and for infants, up to two years of age, 2 to 3 drops. In order to prevent recurrence he advises the continuance of this medicine, in two doses daily, for a week after the

cure. If the prolapsus is of long standing, and does not yield to this treatment, he adds to the above 60 grains of the extract of rhatany.

DISINFECTION BY HEAT.

Among the various means of destroying the infectious material by which certain forms of contagious disease are capable of being communicated, the application of heat has long been regarded as one of the most efficient. Modern research having shown that some communicable diseases are connected with the presence of microbes, or living organisms in the blood and tissues, a scientific significance has been thus given to the belief in the efficacy of heat as a means of destroying contagion. From this point of view it has become desirable to investigate the conditions under which micro-organisms are destroyed by heat; for if the probable inference, that all diseases of the contagious class are similarly referable to such organisms, be well founded, valuable means of counteracting their influence may be ascertained. An elaborate investigation of this subject has lately been carried out by DR. PARSONS, in conjunction with DR. KLEIN, at the instance of the Local Government Board; and in the supplementary report of the medical officer of that department there is a long report upon the experiments made and the results arrived at. Going back to the earliest recorded experiments on disinfection by heat, those made by Dr. Henry, of Manchester, in the early part of the present century, it appears to have been shown by them, so far as they went, that the contagia of the ordinary infectious diseases are destroyed by dry heat at temperatures below the boiling-point of water. It was found that the activity of vaccine lymph was destroyed by exposure to temperatures ranging from 140° to 192° F. for periods of from two to four hours. Subsequent experiments of the same kind by Dr. Baxter gave a somewhat different result, which was attributed to the shorter periods of exposure to heat in the latter case. The experiments of Drs. Carsten and Coert also showed that calf lymph was invariably sterilized when heated to the boiling-point of water; but the experiments of Dr. Henry upon the precise degree of heat necessary to destroy the contagia of human communicable diseases other than vaccinia do not appear to have been repeated by subsequent investigators, owing doubtless to the ethical objections to the performance of such experiments on the human subject. Observa-

tions have, however, been recorded from time to time, tending to show that the contagia of the commoner infectious disorders, and those of yellow fever and puerperal fever, do not survive exposure to a temperature of 212° F. Davaine ascertained that the blood of an animal suffering from anthrax was disinfected by an exposure for fifteen minutes to a temperature of 123° , but that the virus of septicæmia was not destroyed by prolonged ebullition, while in Dreyer's experiments rabbits inoculated with septicæmic blood, previously mixed with water and boiled, were not infected. Later experiments by Koch and his coadjutors have been directed to ascertaining the destroying effect of chemical agents and of heat upon organisms devoid of spores, such as the micrococcus prodigiosus and the bacterium of blue pus and of septicæmia, while, as specimens of spore-bearing kinds, the bacilli of anthrax and those found in hay and in garden earth were chosen.

The general result of the experiments with chemical agents was to show the comparative or entire inefficacy as germicides of most of the substances commonly regarded as disinfectants, such as carbolic acid, sulphurous acid, chloride of zinc, etc. But the spores of bacillus anthracis were destroyed by exposure for one day to the action of aqueous solutions of chlorine, iodine, bromine, corrosive sublimate, permanganates, and osmic acid. They were also destroyed by exposure for longer periods to arsenious acid, chloride of iron, and some other substances. The destructive power of substances in the form of vapor was found in some cases to be increased by elevation of temperature. In the experiments with hot air it was found that bacteria free from spores cannot withstand exposure for one hour and a half to a temperature little over 212° F.

Spores of mildew require for destruction a temperature from 230° to 239° F., maintained for an hour and a half. Spores of bacilli were destroyed only by exposure for three hours in air heated to 284° F. The results obtained with steam were strikingly superior to those with dry heat, exposure for five minutes being sufficient to kill the spores of the anthrax bacillus; moreover, the penetration of heat into articles exposed to steam took place far more quickly than when the same articles were exposed to dry heat.

In the experiments conducted by Dr. Parsons and Dr. Klein, hot air, boiling water, and steam at atmospheric pressure were employed as the means of applying heat. The

results obtained with dry hot air were more favorable to its efficacy as a disinfecting agent than those obtained by Koch; and since none of the infectious diseases for the extirpation of which measures of disinfection are commonly required in practice are known to depend upon the presence of bacilli in a spore-bearing condition, it was inferred that their contagia would not be likely to retain activity after exposure of an hour to 220° F., and that provided an article, such as a pillow, were heated throughout to that degree, it would not be likely to retain infection. In the experiments with boiling water the anthrax bacillus containing spores was destroyed by exposure for five minutes or less; and it was not thought necessary, therefore, to extend these experiments with the less resisting forms of contagia. The results of the experiments with steam at 212° F. were conclusive as to its destructive power upon all the contagia submitted to its action; and only in one instance was there room for suspicion that the disinfection was not complete when the highly resistant anthrax spores were exposed to steam for five minutes only. The concurrence of these results with those obtained by Koch, Gaffky, and Söffler is considered to justify the conclusion that the complete penetration of an object by steam-heat for more than five minutes is sufficient for its thorough disinfection. The efficacy of ordinary steam having been established so satisfactorily, it was not considered necessary to make any experiments with steam at higher temperatures, or under pressure.

As regards the practical application of this method of disinfection, it was necessary to ascertain how the required degree of heat may best be made to penetrate through bulky and badly-conducting articles, such as bedding, clothes, etc., for the disinfection of which heat is especially employed. It was further necessary to learn whether such articles could be submitted to the required degree of heat without injury; for if that is not the case the method of disinfection by heat would not present much advantage over that of total destruction by burning. Although the outer casings of such articles as pillows and mattresses coming into contact with the body of a patient are more liable to become soiled with infectious material than the inner parts, and are for that reason more likely to convey infection to other persons, it would not be safe to assume that the power of infection was confined to these external coverings, and for that reason it is necessary that the

heating should be made to permeate every part of the articles to be disinfected for a sufficient time to destroy all infectious material with which they may be impregnated. Bedding, blankets, etc., are of all things the most difficult to deal with, and even thin layers of badly-conducting materials offer considerable resistance to the penetration of heat. This is a reason why the application of heat through the medium of dry air to such articles is less readily efficacious than the use of steam; and in the experiments made in this way it was found that a satisfactory result could be secured only when the application of heat was continued for many hours. When steam is employed as the heating medium a better result is obtained, mainly in consequence of the large amount of latent heat contained in steam; partly, also, because its presence prevents the cooling effect of the evaporation of any moisture in the articles operated upon, and partly because the moistening of the dry porous substances by condensed steam is attended with disengagement of heat. The use of steam under high pressure is considered by Dr. Parsons to be an additional advantage in promoting the penetration of heat, though the opinion is not in accordance with the views of Koch. Another very difficult point to be considered in connection with this method of disinfection is the liability of articles to injury by exposure to heat. Even partial deterioration, by no means amounting to actual spoiling, of articles disinfected by heat might become a source of serious embarrassment to sanitary authorities by rendering the owners of such articles unwilling to submit them to disinfection. On this important point the report does not profess to offer a precise decision, but merely to set forth some of the general principles to be kept in view for guidance, according to the materials operated upon and the particular kind of apparatus employed. The chief modes in which injury may be caused are scorching or partial decomposition of organic textures, indicated in its incipient stages by changes of color and texture, as well as by brittleness; weakening of strength; fixing of stains so that they will not wash out; melting of readily fusible substances, such as wax, varnish, etc.; alteration of the color, gloss, etc., of dyed goods; shrinkage and felting of woollen materials, and wetting. These effects differ somewhat, according as steam or dry heat is employed. The general conclusions as to the practical utility of disinfection by heat are summed up in the report as follows: For washable ar-

ticles which will stand boiling in water no other procedure is necessary, due care being taken that infection is not communicated in the removal of the articles. The articles for which a more technical "disinfection" by heat is required are such as will not bear washing in boiling water, such as blankets, rugs, carpets, cloth clothes, pillows, beds, mattresses, furs, and dresses. Articles of furniture with stuffed seats may also require disinfection, as well as rags coming from places where epidemic disease prevails. In such cases the application of steam is the most effectual. Letters may be treated in the same way, provided they are not fastened with sealing-wax. In all cases where steam is used precautions must be taken against undue wetting of the articles to be disinfected by condensation of the steam. Leather articles are at once destroyed by the application of steam, and consequently their disinfection must be effected by careful exposure to dry heat. This very interesting and important report concludes with an extended description of all the different forms of apparatus that have been introduced for the purpose of disinfection by heat, each of them illustrated by drawings to show the mode of construction, and an account of the practical experiments carried out with the assistance of various local sanitary authorities, public institutions, etc.—*Pharm. Journ. and Trans.*, December 26, 1885.

ON ADONIDINE.

HUCHARD presented in the Société de Thérapeutique, at a meeting held on December 23, 1885, a series of cardiographic and sphygmographic tracings taken from patients under treatment with adonidine (vide *Gaz. Hebdomadaire*, January 1, 1886). Our readers will recall that adonidine is the glucoside of adonis vernalis, and was first extracted by Cervello as an amorphous yellowish extract of a bitter taste. The first experiments with the drug were made by Lesage and Montague. The cardiac frequency was found under its influence to be decreased, and at the same time a peculiar state of ventricular rigidity is induced, the ventricle itself becoming pale and anæmic.

Huchard injected 1 to 2 cg. ($\frac{1}{100}$ to $\frac{2}{100}$ gr.) hypodermically into rabbits, and found respiration reduced, the cardiac forces raised, disappearances of paralytic symptoms, fall of temperature, and death ensuing after fifteen to twenty hours. In man the infusion of adonis

vernalis may be given in 4 to 8 grammes (1 to 2 dr.) for a dose, four times daily, or, still better, in pill form, 4 to 5 daily, $\frac{1}{10}$ of a grain each. Huchard reported several cases in which adonidine had been successful. In one case of interstitial nephritis with galloping heart-sounds, anasarca, and beginning asystole, in which sparteine had been given in vain, adonidine induced a profuse diuresis and an unquestionable improvement in the patient's condition. For some time, however, the drug had to be discontinued, on account of diarrhoea and vomiting which it produced. When the quantity of urine fell off again, the remedy was again exhibited, and again relieved the most urgent symptoms; the diuresis rose two to four quarts daily. At the same time the arterial pressure grew stronger, the pulse more regular and full; the oedema and cardiac frequency receded. In a woman having a mitral affection, but no heart-murmur, the drug produced a very audible systolic murmur. In typhoid fever, where great reduction of the arterial pressure exists, Huchard thinks the drug might be used advantageously to raise the pressure.

THE EFFECTS OF COCAINE ON THE CENTRAL NERVOUS SYSTEM.

DR. D. R. BROWER draws the following conclusions from a paper with the above title, published in the *Journal of the American Medical Association*, January 16, 1886:

1. Cocaine in small or moderate doses is a cerebral stimulant, but produces derangement of the digestive and assimilative functions, and diminishes the elimination of waste.
2. The use of cocaine in the alcoholic and opium inebriates is not satisfactory; while it is a more or less perfect substitute, yet its use is attended with greater danger than alcohol or opium.
3. The use of cocaine in mental depression, if we carefully guard against the depressing effects of the drug upon digestion and assimilation, will often give better results than any drug hitherto used.
4. The use of cocaine in neurasthenia is a valuable addition to the treatment.
5. The drug, if administered in large doses persistently, causes a very marked deterioration of the central nervous system, producing a profound cerebral neurasthenia, and may produce such a malnutrition of the cerebrum as to develop insanity.
6. Cocaine occasionally, in doses heretofore

regarded as small, produces alarming depression of the central nervous system.

ON HYPNONE.

LABORDE addressed the Société de Biologie on the 12th of December, 1885, on the new hypnotic, hypnone (*Gaz. Hebdomadaire*, January 1, 1886), and considered especially its physiological action as far as known up to the time. Injected hypodermically into a guinea-pig in doses of $\frac{1}{2}$ to 1 c.c. (8 to 16 gtt.), hypnone causes a profound torpor which terminates in death. Respiration is at first quickened, but soon grows slow, labored, and asphyctic; the heart's action considerably increased in frequency, registers a progressive diminution of its force. The temperature sinks rapidly several degrees (C.). In this animal the somniferous dose is at the same time a fatal one. In a dog hypodermic injections of even 3 c.c. (48 gtt.) produce no sleep; brought into the stomach the drug causes vomiting, but likewise no somnolence. Intravenous injections, however, cause complete and instantaneous anæsthesia and a profound sleep; the pupils dilate, the reflex irritation is lowered, arterial pressure falls, probably on account of the decreased activity of the cardiac muscle, the heart-sounds grow more and more faint and inaudible, and respiration grows asphyctic.

In the meeting held on the 19th of December, Laborde delivered another essay on hypnone, and discussed especially the mechanical and physiological mechanism of the circulatory and nervous phenomena produced by the drug. He regarded a diminished excitability of the pneumogastric and a depression of motor centres in the brain as the chief factors of the physiological influences of the drug. Therapeutically, the drug appeared in his view as actually too dangerous to receive an unqualified commendation.

GRASSET, of Montpellier, remarked that the drug is best exhibited as an inhalation.

CHRONIC POISONING BY BISULPHIDE OF CARBON.

At a recent meeting of the Medical Society of London, DR. W. B. HADDEN read a paper on a case of chronic poisoning by bisulphide of carbon (*The Lancet*, January 2, 1886). The patient was a man aged 45, who was employed at an india-rubber factory, where he had to inhale the vapor of bisulphide of carbon and chloride of sulphur. The main

symptoms were loss of power over the extremities, with a tendency to stagger and inco-ordination generally. He had no defect of vision. His fellow-workman had also been under treatment at St. Thomas's Hospital with general muscular weakness and visual defect with color-blindness. The case was reported in the "Ophthalmological Transactions," vol. v., in which the report of the special committee would also be found.

DR. RICHARDSON said that pure bisulphide of carbon was a powerful anæsthetic, and caused painless death. He had frequently used it to destroy dogs. Delpech, in 1866, was the first to describe the effects of chronic poisoning by this agent. This form of poisoning was more common in France, but even there it had diminished with improved hygiene of the workshops.

SCHULTZE'S SWINGING MOTIONS TO REVIVE ASPHYCTIC NEW-BORN CHILDREN.

PROF. SCHULTZE, of Jena, attracted the attention of the entire medical world when, a good many years ago, he first published his now famous mechanical method to revive new-born children laboring under asphyxia. The question whether a new-born child be actually still-born, and no vital energy be present at all, or whether the spark of life be really latent, ready to set agoing the functional mechanisms under appropriate stimulation, belongs to the most important problems that present themselves to the practitioner.

From a description of Schultze's swinging motions appearing in the December issue of *Schmidt's Jahrbücher* we make the following translation :

The child is caught by its shoulders, so as to place the thumb on the anterior surface of the thorax, the index finger in the axilla from behind, and the other three fingers of each hand transversely across the back, thus supporting the drooping head on the ulnar edges of the palmar aspects of the hands. Then spreading asunder one's feet and inclining the head somewhat forward, the child is swung with outstretched arms upward to an angle of 45°; then the swinging is stopped. The entire weight of the child rests at this moment on the thumb of the physician, which is pressed against the thorax of the child. This position occasions a considerable compression of the thoracic viscera not only from the diaphragm, but also from the chest-walls. This passive expiration occasions often a discharge

of the aspirated fluids through the respiratory channels. Then the physician moves his arms downward, and swings rapidly the child toward his feet, whereby the thorax of the child is widened. As the child hangs by its upper extremities, and the sternal ends of the ribs are fixed, its own weight goes to elevate the ribs, while the diaphragm recedes on account of the shock imparted to the abdominal cavity. This equals a mechanical inspiration of a considerable importance. After a few seconds the child is again swung upward, and the aspirated fluid is then usually discharged.

THE INDICATIONS FOR LAPAROTOMY IN PENETRATING STAB AND SHOT WOUNDS OF THE ABDOMEN.

At a stated meeting of the New York Academy of Medicine, Section on Surgery, held December 14, 1885, after a brief introduction by the chairman, Dr. Stephen Smith, the discussion was opened by DR. JOSEPH D. BRYANT (*Boston Med. and Surg. Journ.*), who said that he who unconditionally asserted that any operation or method of procedure should be resorted to in all cases, even though it were a measure accepted by the profession generally, took a position that required, in justice to the profession and the patient, that all operators should be competent and well equipped for its performance. Especially was conservatism necessary in the advocacy of an operation, the propriety of which, as yet, was spoken of by many with doubt commingled with dread. But a short time had elapsed since the late Prof. James R. Wood had in this hall opposed laparotomy in the cases under consideration in what were generally recognized at that time as sound practical principles; and though marked advancement in all surgical procedures had taken place since then, a sufficient period had not yet elapsed, nor were the members of the profession well enough informed on the details of the entire operation for any one to proclaim boldly that laparotomy should be performed in all cases. Few indeed were the hospitals in the city of New York which could immediately after the accident offer the recognized theoretical, and many of the practical facilities necessary to despatch and cleanliness in operating; not to mention other circumstances bearing on the success of the operation. How much less properly prepared for the performance of laparotomy would the unfortunate patient find the members composing the great mass of the profession!

There were three questions which he thought it well to consider, namely: 1. Should laparotomy be performed in any case? 2. Should it be performed in all cases? 3. When contemplated, should it be done immediately after the accident? In regard to the first, he went on to say that it could not be denied that laparotomy in connection with various abdominal growths was a fully established operation, and the results attending the invasion of the abdominal cavity by numerous operators both at home and abroad plainly attested the expediency of the measure in connection with such growths. There was no proof, so far as he knew, that the peritoneum of the male was not as tolerant of manipulations as that of the female. The excellent success of Billroth and many others, so far as immediate results were concerned, from operations on the stomach, pylorus, gall-bladder, spleen, kidneys, etc., of both sexes, fully showed that intolerance of the peritoneum to manipulations could not be considered a rational objection to the operation of laparotomy for penetrating abdominal wounds. These operations showed also that neither could the length of time required nor the extent of raw surfaces resulting in this variety of laparotomy be urged as objections to the procedure.

Among the practical elements which at the present time entered into a case of laparotomy for penetrating wounds, but which did not exist, or, at all events, exert an equal force, in laparotomy for other common causes might be mentioned the following:

1. A doubt whether the abdominal viscera were injured. This doubt could exert but little influence, since the signs and symptoms of visceral penetration were as pronounced as those relating to other conditions in which laparotomy was deemed advisable. Moreover, an exploratory laparotomy would enable the operator to settle the question of penetration.

2. Existing shock. This element was almost unlimited to those cases of laparotomy which were to be done for penetrating wounds. The shock was due either to loss of blood, to injury done the parts, or to both combined. He believed it to be an established fact that when severe shock followed immediately after the injury, it was due in the great majority of cases to loss of blood; and if this were the case, the indication was to check the hemorrhage at once. An exploratory laparotomy would decide this question.

3. Unfavorable surroundings of the patient.

This element, like the second, was limited to laparotomies for penetrating wounds. It included the surroundings of the patient at the time of the injury, the removal to his home or to a hospital, and the absence of proper preparations for operating in accordance with the best recognized methods of procedure in such cases. It would be impossible to entirely avoid these contingencies; but their dangers could be greatly lessened by caution in moving the patient, by taking him to a suitable hospital instead of to his own home, and by increased familiarity on the part of the profession with all the details pertaining to the operation of laparotomy under the circumstances.

4. Unskilled operators. By this he said he meant that the surgeon in charge of the case might not have had his attention forcibly drawn to the details of the operation, which was recognized as having an important bearing on the prognosis of such cases. More particularly would he find himself in this position if he had previously looked on the operation with a disfavor bred of prejudice, instead of the result of patient toil and observation. This element could be entirely overcome if the members of the profession would but devote an ordinary amount of attention to the matter.

5. Greater exposure of the abdominal cavity and its contents. The great care necessary in order to find out and to remove from the abdominal cavity all the blood and extravasated intestinal contents, to check hemorrhage, and also to detect all the points of injury, required that the intestines and the omentum should be thoroughly examined by a preconceived method, rather than by the rough handling associated with illogical haste.

6. Existence of hemorrhage. In visceral perforation, intra-abdominal hemorrhage was necessarily a constant feature. The vessels of the omentum and of the intestines, especially the former, bled with a pertinacity which was unusual in those of other portions of the body, owing, it was thought, to the walls of the vessels being loosely supported by the surrounding tissues, also to the fact that they seemed to possess in a much less degree the inherent attributes which ordinarily enabled the natural forces of a vessel to check hemorrhage, namely, contraction and retraction. The suspicion of the existence of much intra-abdominal hemorrhage was enough to indicate the making, at least, of an exploratory incision, by which means its existence could be positively diagnosed; when, if neces-

sary, the incision could be extended, bleeding points checked, and blood-clots removed.

7. Extravasation of intestinal contents. This was a part of the history of penetrating abdominal wounds, and constituted an occurrence which was most to be dreaded by the surgeon.

Dr. Gross asserted that no case had ever been known to recover in which faecal matter existed in the abdominal cavity; therefore faecal extravasation was the strongest of the indications of laparotomy,—offering, as it did, the only means of recovery.

8. The greater difficulty of cleansing the abdominal cavity. If blood and intestinal contents had been generally diffused, the cleansing of the abdominal cavity was more tedious and difficult, and also of more importance than in laparotomy for other causes; but the thorough performance of this duty, at least so far as the intestinal contents were concerned, appeared to be the only means of saving the patient's life. As to blood, no one could tell the amount that might remain, and yet recovery occur.

In Dr. Bryant's opinion, laparotomy was a justifiable operation, but it was not to be attempted, even in so-called favorable cases, unless the operator could avail himself of many of the recognized means of procedure necessary to control the shock of the operation, and was sufficiently familiar with its steps to accomplish the work with accuracy and despatch.

Leaving the second interrogatory, should laparotomy be performed in all cases, to be discussed by others, he passed on to the third. When contemplated, should laparotomy be done immediately after the accident? Assuming all things to be equal, he thought that it should be done at once, or, at least, as soon as the necessary preparations required to insure a fair prospect of success could be made. There should first be an exploratory incision, followed, if the condition of affairs warranted it, by the actual laparotomy. In the former, the incision was made in the median line, so situated and of sufficient length to expose to view the probable seat of the internal injury. The surgeon could then, in the great majority of instances, determine if penetration of a viscus had taken place, and if hemorrhage or intestinal extravasation existed. If the patient was in danger from immediate hemorrhage, the blood in the abdominal cavity could be seen through the incision.

Does the exploratory incision expose the patient to unusual danger? The large number

of successful laparotomies, both in this country and abroad, seemed to him to argue this question in the negative; and if this was true, he said, all that was possible was gained, while but little could be lost from the exploratory incision.

DR. J. W. WRIGHT said that he was not prepared to take the ground that all cases of penetrating wounds of the abdomen were to be treated by laparotomy. As regards gunshot wounds, it would be found that the large or small size of the missile, as well as the velocity of the latter, made a great difference in the severity of the injury. For example, he did not believe that the twenty-two calibre bullet, or the ordinary bullet of about twenty grains' weight, behind which there was but about five grains of powder, was calculated to do much mischief. As a rule, such a bullet lodged in the abdominal walls, but even if it did penetrate the cavity, and pass through a knuckle of intestine, the opening made by it was so small that an erosion of the mucous membrane was caused, which would be sufficient to prevent the extravasation of faecal matter, while the hemorrhage would be but trifling. If, then, he were called to such a case, and there were no symptoms specially calling for laparotomy, he certainly would not perform the operation. But if, on the other hand, he was called to a case in which the injury had been inflicted by what is known as an "express charge,"—a forty calibre bullet, weighing two hundred and seventy grains, with one hundred and ten grains of powder behind it,—he would expect to find abundant indications for its performance. Even in the absence of symptoms, he would consider the case one for immediate laparotomy, for he would feel very sure that if such a missile got into the abdominal cavity at all, it would cut and tear everything that came in its way.

In stab wounds, he said he would not perform laparotomy in many cases, even if he knew that the wound was a penetrating one, or even if the omentum was protruding. In this connection he mentioned the case of a drunken sailor, who stabbed himself in the abdomen, and when a portion of the omentum protruded through the wound, caught hold of it, and dragged it still farther out. Yet the man recovered perfectly, and that without being laid up for an hour. On the very day that he received the injury he went to sea, and in the course of a week the protruding omentum sloughed off, after which he had no further trouble. He also mentioned another somewhat similar case at Bellevue Hospital.

As to the matter of diagnosis, it was difficult to say in every case whether the peritoneum was wounded or not. In many instances there was well-marked shock, simply from the force of the blow, particularly if this was in the neighborhood of the epigastrium. If the shock was extreme and protracted, however, it was probable that the abdominal cavity had been penetrated. In the second place, the occurrence of meteorism indicated damage to the viscera. Thirdly, the protrusion of the gut through the wound proved nothing as to whether the gut itself had been injured or not. This was shown, however, by the escape of the intestinal contents. He thought, therefore, that we should be careful how we state that laparotomy is called for in every case.

DR. R. F. WEIR said that he did not feel in a position to say that penetrating stab wounds of the abdomen were necessarily accompanied with injury of the intestines or abdominal viscera. Unless, in any case, there were symptoms indicating the presence of such complications, the surgeon had only to watch the patient carefully. In regard to gunshot wounds, there was a different state of affairs, and for his own part he had a somewhat greater respect for the capacity for injury of the small pistol balls than Dr. Wright felt, since he had known them to penetrate the abdominal cavity and do a considerable amount of mischief. As a rule, one of the indications was to explore the wound under any circumstances, and he thought that statistics clearly proved that every gunshot wound of the abdomen, at short range, should be carefully examined, in order to see whether or not it penetrated the cavity.

The question of hemorrhage always came up in connection with the existence of shock, and it was often impossible to determine off-hand in any instance whether the patient was suffering from the shock of the injury or of extravasation, or from the shock of hemorrhage. He had learned from the experience of two sad cases that delay might prove fatal (although if the shock was not due to hemorrhage, the chances of success with laparotomy would be greater after it had passed off), and, therefore, he agreed with Dr. Bryant that it was best to make a small exploratory incision in every case where it was impossible to decide whether the shock was due to hemorrhage or not. He did not agree with Dr. Bryant, however, that the small opening would show whether there was much bleeding or not. The blood naturally gravitated toward the lower part of the abdominal cavity, and,

therefore, it was often necessary to pass in a sponge on a stick in order to find out the existence of hemorrhage. Dr. Wright had stated that a small bullet might pass through the intestine without causing extravasation of fæces, or otherwise doing harm, but the very reasons which would make such a wound of less severity, would also be the ones why a laparotomy would be of less severity under the circumstances. For himself, he would proceed to perform laparotomy if the exploratory incision showed that the intestines were wounded, for even if there was no extravasation of fæces, there would almost certainly be an escape of gas into the peritoneal cavity.

DR. A. C. POST thought that in regard to incised wounds, it made a great difference in what part of the abdomen the stab was inflicted. If in the region of the stomach and liver, there was less danger of hemorrhage than if the wound was situated in the region of the intestines. Again, if it was still lower down, it might be below the peritoneum altogether, especially if the bladder was distended at the time. In this connection, he related a case in which a stab wound of the lower part of the abdomen penetrated the bladder, and was followed by a gush of urine, and said that in a case of this kind the safety of the patient, no doubt, was due to the large size of the wound, which gave free drainage, and prevented the retention of the urine in the tissues. A large and direct opening would also have much the same effect as regards extravasated fæces. When there was fæcal extravasation, however, he thought that laparotomy should always be performed and the abdominal cavity thoroughly cleansed.

DR. W. M. POLK said that he had had no experience with laparotomy for penetrating wounds, but so far as danger was concerned, the results obtained, both at home and abroad, showed that the exploratory incision was quite a simple affair, comparatively free from danger. It seemed to him, however, that a simple incision, such as those who confined their attention to pelvic surgery frequently had to make, would scarcely be sufficient in the class of cases now under discussion. The gynecologist generally knows about what condition of things he might expect to find, and if a large tumor was present he swept his hand around it, but did not mix his hands much with the intestines. Even in the case of the most extensive growths, the intestines were very little disturbed. This, then, was the point: If a limited exploration were made, there was comparatively little risk, but if it

was necessary to introduce the hand and feel around among the intestines, a great deal was added to the risk. Within the last two or three years he has seen this strikingly illustrated in New York, in Tait's and other similar operations. Formerly, when there were marked adhesions, the intestines were freely handled, and sometimes laid upon the abdomen, and the result was that a fatal result frequently followed. Within the last eighteen months, however, in this same class of cases, the results had been very much more favorable, and this was owing to a different method of procedure. A much smaller incision was now used, and the adhesions were quickly torn away by the hands, without regard to hemorrhage, because the latter soon ceased, and a drainage tube was introduced to remove the blood. Instead of the operation covering an hour or an hour and a half, as before, it now took only twenty or twenty-five minutes. The whole question of danger, therefore, as it seemed to him, would depend on the amount of handling of the viscera required in any given case. So far as the simple opening of the peritoneum was concerned, he thought it was as safe as sewing up the cervix uteri, and attended with really less danger than the opening of the pleural cavity.

DR. W. G. WYLIE thought that the principal cause of shock in the cases under consideration was hemorrhage. The dangers in Tait's and other similar operations, to which Dr. Polk had referred, he believed to have been due not so much to handling of the intestines as to exposure to septic influences from the atmosphere, sponges, etc. According to his observation, the large majority of the deaths were due to septic infection. He would have no hesitation in opening the peritoneum in any case where the patient's life was in question. There was very little danger of increasing shock thereby, and if the shock was very marked, there was every reason to believe that severe hemorrhage was taking place, so that the prompt performance of laparotomy was urgently demanded under the circumstances. After performing operations in the abdominal cavity, he not infrequently washed out the latter with a solution of bichloride of mercury, one to ten thousand, following this with the injection of simple hot water.

CHLOROFORM-MANIA.

DR. REHN adds to the literature of chloroform-mania two new cases, which he describes

in the *Centralblatt für Med. Wiss.* of January 2, 1886.

CASE I.—A workingman, 42 years of age, who, up to his thirty-ninth year, enjoyed good health, becomes a morphomaniac on account of violent pains in the inguinal region. And when later even larger doses of morphine failed to afford the desired relief he began to inhale chloroform, and soon accustomed his system to the drug to such a degree that he could consume a wine-bottleful within twenty-four hours. Rehn presents the following clinical index as the sequelæ of the habitual chloroform inhalation of the patient: great depression, irritability, weak memory, lowered intellectual faculty, loss of appetite, emaciation, appearance of gray hairs, œdema, engorgement of the liver, icterus, weak and frequent pulse, and impotency. Withdrawal of the drug made all these symptoms disappear, relapses brought them out again. Later the patient became an alcoholic, and showed psychical alterations such as appear in the beginning of a progressive paralysis.

CASE II.—A lady, 70 years of age, used for thirty years, alongside of large quantities of alcohol and ether, also for variety's sake, chloroform, partly internally, partly by inhalation. The actual quantity of chloroform consumed could not be determined, though it was surely large. In her seventieth year she was seized with grave delirious paroxysms; after their disappearance she "swore off" chloroform and returned to alcohol and ether; of ether she took very large quantities. Rehn infers that chloroform exerts its destructive influence not only upon the red blood-corpuscles, but also upon the nerve and brain substances.

HYPODERMIC INJECTIONS OF COLD WATER IN SCIATICA.

DR. D. H. LEWIS, of Lone Pine, Pa., writes to the *New York Med. Record* for January 23, 1886, that he was consulted by a man 60 years of age, who was suffering greatly from sciatica. He had been treated for the past eight weeks by two physicians, and had run through the entire list of anti-neuralgic remedies. Being desirous of trying something which was at least new to the patient, Dr. Lewis determined to employ hypodermic medication, and having no drug handy which he cared to use, he filled the syringe with cold water and injected the fluid deep down behind the trochanter. The following day the patient returned and said that he was feeling much better. The injections were ac-

cordingly repeated every third or fourth day for a period of three weeks, by the end of which time a complete cure was obtained. The writer has since treated a number of cases of sciatica in the same way, with equally gratifying results. He thinks that possibly many of those cases which have been reported as cured by the injection of certain drugs, such as cocaine, might have terminated in an equally favorable manner had simply cold water been used.

ON TARDY SYPHILIS.

To the one hundred and four cases of hereditary tardy syphilis heretofore collected, ZEISSL adds in the *Wiener Klinik* (Heft vii., 1885) four new cases which came under his personal observation.

CASE I.—A young man, 18 years of age, whose three younger brothers and mother are healthy; about the father's history no statements could be obtained. Patient showed in his second month of life pronounced rachitic symptoms, in his third year swelling and pain in the knee-joint, in the fourth year a diffuse parenchymatous keratitis, and in his eighteenth year an ulcer on the posterior wall of the pharynx, which healed under mercurial treatment.

CASE II.—A girl, 15 years of age; two elder sisters and brothers and mother are healthy; of her father nothing positive could be ascertained. In her ninth year she had ulcers on the cornea on both eyes, in her tenth an ulcer on the upper lip, which healed in six to eight weeks. In her fifteenth year an ulcer appeared on the cutaneous nasal septum, which penetrated the cartilaginous septum, and later healed promptly under specific treatment.

CASE III.—A boy, 9 years of age; his father contracted syphilis three years before his marriage; his mother and other younger sisters and brothers are healthy. Three months ago a serpiginous ulcer appeared on the chest; the septum narium was suddenly attacked and perforated, and ulcerations broke out on the hard palate. All ulcerations healed quickly under antisyphilitic treatment.

CASE IV.—A student, who had never had a coitus; his parents were believed to be healthy. In his seventeenth year an ulceration appeared on the right wing of the nose, which led to a perforation of the septum. Later, ulcers broke out on the palate and uvula. Injections of corrosive sublimate healed all ulcerations;

relapses occurred, but the specific treatment ultimately produced a permanent cure.

SALICYLATE OF LITHIUM IN ARTICULAR RHEUMATISM.

M. VULPIAN has read before the Académie de Médecine a summary of the results of his experiments with salicylate of lithium in articular rheumatism. He states that his experiments indicate that lithium salts are not so poisonous as they are believed to be. Salicylate of lithium is not more dangerous than salicylate of sodium, and can be administered in almost equally strong doses. In acute articular rheumatism, salicylate of lithium relieves the pain which often remains in the joints after the swelling has disappeared; whereas colchicum and salicylate of sodium have no effect. M. Vulpian believes that salicylate of lithium is especially beneficial in fibrous rheumatism. In progressive subacute rheumatism, he has seen salicylate of lithium produce great improvement. Salicylate of sodium has also been successful in such cases, and produced amelioration of the patient's condition; but both greater and more lasting benefit is obtained by salicylate of lithium. In chronic articular rheumatism M. Vulpian has found salicylate of sodium useless, whereas salicylate of lithium has had a marked effect on the joints, which become less swollen and less painful than before the treatment. In order to obtain evident results, 4 grammes (60 grs.), sometimes $4\frac{1}{2}$ or 5 grammes, must be given daily. Larger doses are followed by toxic symptoms. This drug sometimes induces headache and deafness, but is never followed by the distressing noises which characterize treatment by salicylate of sodium. The headache and deafness disappear quickly.—*British Med. Journal*, January 2, 1886.

ON KAWA, A POWERFUL ANÆSTHETIC AND SPINAL DEPRESSANT.

DR. L. LEWIN, of Berlin, the well-known therapist, has the merit of instituting the first experiments with a drug which possesses such distinctly pronounced and powerful physiological properties that its utilization in therapeutics is scarcely questionable. We condense from his highly interesting paper in the *Berliner Klinische Wochen.* of January 4, 1886, the most significant topics. Kawa (Kawa-Kawa, Yakona, Yangona) is the root of *Piper methysticum*, a shrub about three yards high, growing upon the various islands em-

braced under the name of Polynesia in the South (Pacific) Ocean. The shrub is especially found on the New Hebrides, the Sandwich, Feejee, and Samoa Islands, where the use of the plant in some form or other is exceedingly old, and has even been described by the first discoverers of these islands. The kawa-drinks reigned supreme in these islands until the introduction of alcohol; but even to this day kawa is a favored drink with all natives of Polynesia, where kawa-houses exist like our cafés. The preparation of kawa is looked upon by the natives as a solemn and religious affair, which takes place publicly under various ceremonies. Special men and women are selected to chew the root, then it is placed in vessels, water added, and stirred with the hands. The firm masses are then dissolved, and the kawa-drink is ready for use, which announcement is followed by the jumping, dancing, and crying of the assembly, which up to this point has observed silence. The drink is served under prayers in half cocoa-shells, and appears as a grayish, dirty-looking fluid.

The assumption that during the process of preparation a fermentation takes place is erroneous.

Examined chemically the root contains forty-nine per cent. of starch, numerous salts, and a non-nitrogenous body called kawahin. Lewin found besides another body which he termed yangonin. Both these elements, however, have been experimentally proved to be inert. The actual active principle is a resinous mass of a fatty, aromatic taste, pungent and hot like pepper.

Local Action.—The kawa-resin increases the salivary secretion, and produces loss of sensitiveness immediately or shortly after application on all parts of the body. Taken into the mouth, one receives the sensation as if the part were burnt. Applied locally to the pharynx, the part grows anæsthetic even in the most sensitive persons. Gradually the increased salivary secretion and the anæsthesia of the pharynx disappear again. Applied to the conjunctiva of cold- and warm-blooded animals, both conjunctiva and cornea lose the power of reaction to even the strongest irritation. The eyeball can be pressed, pinched, and rotated at will without producing a trace of a reaction. In guinea-pigs this condition may last for hours; the eyeball appears more prominent by the regression of both lids, but the pupils retain their normal reactive capacity to light. The return of sensitiveness and reaction is very slow and gradual. If

the kawa-resin be injected into the connective tissue of an animal, anæsthesia ensues in the sphere surrounding the point of injection; mechanical and chemical irritation elicit no reflex response. In a frog the electric irritability was found likewise to be reduced. At and surrounding the point of application no inflammatory symptoms appear, but, on the contrary, marked ischæmia.

Constitutional Action.—Ingested, the kawa-drink produces a sensation of comfort, peace, and felicity, and never, as in the case of alcohol, desires of altercation or fight. In the mouth a peculiar, pleasant sensation of coolness is received, and may last for one to two hours. Consciousness and reason are in no way depressed, as in the case of opium, but the mental faculties are rather heightened. Fatigue and hardships appear easier borne under the influence of the drug. If larger quantities of the kawa-drink are ingested, a state of happy freedom of cares and a dreamy consciousness set in. The limbs grow feeble and powerless; gradually the will loses its control over the motor apparatus, rendering co-ordinate movements impossible. The person soon lies down, and gradually falls asleep, or rather in a condition of somnolency.

Nausea and headache, paresis of the extremities, and a nervous trembling are the usual sequelæ of kawa-ingestion after the somnolency has passed off. The system soon grows accustomed to the drug, and the kawa-habit is readily established. It has been asserted that the habitual use of kawa produces pityriasis, though this is questioned by many observers.

Animal Experiments.—If kawa is administered to frogs per os or hypodermically, the animals soon grow feeble, the head sinks, and a state of motor incapacity ensues. Though voluntary motion has disappeared, reflex action is still active. Later no response follows upon even the strongest irritation save the electrical one, the efficacy of which is retained longest.

Lewin saw frogs in this condition for nine consecutive days; only the reaction to light and the slow cardiac action still testified to the life of the animals.

A general central paralysis is produced by kawa in a manner that the anterior horns of the gray substance, the motor ganglia, are first attacked, and later the sensible elements in the posterior horns of the gray substance, and lastly the brain ganglia. In birds, rabbits, cats, we obtain the same physiological

effects. At first motion is apparently increased, the animals endeavor to run or fly away; then this desire vanishes, and the animal lies down; temperature, respiration, and pulse fall gradually and simultaneously.

An alcoholic solution applied by the mouth or subcutaneously produces a deep sleep within a few minutes. Part of the kawa-resin is eliminated with the urine. The gastric mucous membrane shows, after death, an ischæmic appearance. These interesting observations clearly demonstrate that in kawa we have to deal with a drug of a most energetic activity, and that its power to produce complete local ischæmia and anæsthesia, reduction of the excitability of the spinal motor apparatus, and besides psychical quiescence, can be unquestionably utilized in therapeutics. Whether the drug has at the same time a diaphoretic, diuretic, or tonic action (to the stomach) has not yet been tested, though it is asserted. The drug is likewise credited to be able to reduce corpulency, and to favorably influence the gonorrhœal process.

Further observations and experiments will no doubt determine the proper therapeutic virtues of the drug, which at all events must be regarded as a valuable acquisition to our remedial resorts.

A NEW METHOD FOR THE REMOVAL OF FOREIGN BODIES FROM THE NOSE.

DR. D. BRYSON DELAVAN, of New York, writes to the *New York Med. Record* for January 23, 1886, as follows: "The presence of a foreign body in the nasal cavity is usually attended with marked swelling of the neighboring mucous membrane. Its extraction by any of the means in common use is accompanied with pain, often of great severity, and is often followed by a copious hemorrhage. The swelling offers, of course, a serious obstacle to the extrusion of a hard body, while one which has increased in size from the imbibition of water becomes all the more firmly impacted. Hence, in attempting the removal of the body, more or less laceration of the membrane is likely to occur. The pain, with difficulty tolerated by an adult, causes a child to become in almost every instance unmanageable, so that an anæsthetic is required. The hemorrhage is usually controllable after the lapse of a few minutes, but may, meanwhile, cause considerable annoyance. From our knowledge of the physiological action of cocaine upon the nasal mucous membrane, it is evident that, by its use in these cases, all of the above difficulties may

be overcome; for applied to the nose, the mucous membrane becomes strongly retracted, the sensibility to pain lost, and the blood-vessels exsanguinated. Thus, the calibre of the fossa is greatly widened, the irritation and consequent resistance done away with, hemorrhage prevented, and the removal of the foreign body thereby greatly facilitated. To carry out the method, the occluded nostril should first be cleansed with a spray or a gentle current of some lukewarm alkaline solution, after which a four per cent. solution of cocaine should be applied to the mucous membrane. When its effect has become complete, the extrusion of the body should be attempted by directing the patient to blow forcibly through the affected nostril. Failing in this, it should be drawn out by some suitable instrument. Should the patient be too restless to make this practicable, an anæsthetic may still be administered. In cases of invasion of the frontal sinus or antrum of Highmore by insects or larvæ, cocaine should be applied to the membrane before the administration of chloroform or ether, in order that the canals leading to these cavities may become as patent as possible, and thus the vapor of the anæsthetic be admitted very thoroughly to the intruder's presence. The insensitiveness of the membrane produced by the cocaine will, in these cases, certainly add to the comfort of the sufferer should it be necessary to inject, or still better, to spray the nose with chloroform."

ON INFANTILE APHASIA.

PROF. BERNHARDT, of Berlin, presents his views about infantile aphasia in a little pamphlet (*Deutsche Medizinische Zeitung* of January 1, 1886), from which we abstract some salient points.

1. Genuine infantile aphasia is not so common an affection as is commonly believed; about ninety cases are all that are recorded.
2. Its etiological factors are nearly identical with those producing the affection in the adult phases of life, with special consideration, though, of the various characteristics of childhood. The principal causes are reflex conditions after indigestion, entozoa, psychical irritation, infectious diseases, acute and chronic brain-affections.
3. Infantile aphasia is chiefly a symptom of cerebral infantile paralysis.
4. Hemiplegia does not necessarily exist along with aphasia.
5. The affection may disappear spontane-

ously, especially after prudent and systematic physical exercise.

6. The nature of the cerebral lesion in cases of aphasia existing since birth is not known, since no autopsies are recorded. The therapeutics of the affection is little effectual; antiphlogistic measures at first, and later the galvanic current, together with the preparations of iodine and bromine, suggest themselves.

CHLORIDE OF CALCIUM AS A THERAPEUTIC AGENT.

We have already referred to this agent in the treatment of scrofulous enlargement of glands, and the views which we have published are confirmed by a recent paper by MR. ARTHUR DAVIES in the *Practitioner*, January, 1886. He reports three cases which he has selected as types of numerous others, which seem to show that chloride of calcium deserves to be ranked as a very useful agent in cases of lymphatic glandular enlargement. The first case may fairly be considered one of lymphadenoma, seeing that the glands were of a stony hardness and had never suppurated. The other cases were of a scrofulous nature, and the exhibition of this drug in these cases was almost always attended with beneficial results. It is useful to note to what extent the drug, cautiously increased, may be tolerated. His method of administering was to give at first 10-grain doses three times a day in 30 drops of water. This, after a week or so, may be gradually increased until even as much as 40 grains may be taken three times daily without producing unpleasant symptoms, with the exception of an occasional scalding sensation in the morning when passing water. For children, of course, the dose must be smaller. Three grains may be given three times daily, and increased to 10 grains. In spite of apparent failure, Mr. Davies advises that this treatment should be persisted in, as possibly twelve months may elapse before improvement takes place. He states that the chloride of calcium is perfectly useless in cases where suppuration has commenced.

LEUCOPLACKIA OF THE MOUTH.

The syphilitic element, which especially in cutaneous affections forms so frequently the etiological basis, is no doubt often overlooked, but, *vice versa*, it may happen that the practitioner suspects a specific taint where none exists. Both of these diagnostic errors, which

of course render the treatment of the case fruitless, can be avoided by a careful attention to the characteristic features of the differential diagnosis.

Leucoplackia oris (psoriasis, tylosis, ichthyosis, or keratosis oris) presents, both regarding its locality and its appearance, a sufficient resemblance to the so-called mucous patches (plaques muqueuses) that its distinctive character and symptoms deserve special attention.

DR. SCHECH, of Munich (*Deutsche Medizinische Zeitung* of January 7, 1886) is not certain whether the affection ought to be classed with the chronic inflammations or the neoplasms. In view of its causes, which will be considered below, we do not hesitate to regard leucoplackia as a product of irritation and to place it in the category of chronic inflammations.

Favorite seats of the affection are the mucous membranes of the lips, cheeks, and of the upper and lateral sides of the tongue. We find it consisting of circumscribed reddish patches; the epithelium of the locality grows cloudy and lends to the mucous membrane a milky appearance, as if the place had been touched by the caustic pencil. Later the patches increase in size, become confluent and look marbled. A silver-gray or yellowish-white color is also invariably present.

The complaints of the patients are variable, usually they have a stiffness and impeded motility of the tongue and lips. The affection may limit itself to a couple of months, but may also extend over twenty to thirty years. A complete cure is rather a rarity.

Characteristic of leucoplackia, in contradistinction from the mucous patch, for which it is often mistaken, is the persistency of the eruption and the silver-gray color. The syphilitic patches usually are of short duration, and soon change into ulcerations, and their color is a dirty gray. Besides, the leucoplackic eruption is of a light and yielding consistency, while those of syphilis are hard and resistant. Ultimately, of course, the inefficacy of a specific treatment would reveal its true nature.

The prognosis is unfavorable not only on account of the rarity of a complete cure and the usual length of its duration, but also and chiefly on account of the predisposition to carcinoma which leucoplackia is apt to create. Schech thinks that excessive smoking is the most frequent cause of the affection, though no doubt other agencies, such as the chewing of tobacco, dental caries, habitual use of pungent and acrid victuals, alcoholic excesses, gastric affections, and anæmia may also participate in its causation.

Zeissl strangely regards the affection as produced by corrosive sublimate (not by syphilis), and states that in great smokers it becomes especially marked. Kaposi, on the other hand, brings the disease in direct communication with syphilis.

The treatment must consist in the first place in the removal of all conditions which might be concerned in the causation of the disease. The epithelial layers then have to be removed by an alkaline mouth-wash, preferably the bicarbonate of sodium (10 to 300). In case of existing great pain 10 to 20 per cent. solutions of the muriate of cocaine are indicated. The application of a caustic is to be avoided by all means.

TREATMENT OF CHRONIC RHEUMATISM.

At a meeting of the New York Academy of Medicine, Section on Materia Medica and Therapeutics, held December 16, 1885, DR. PETERS, by special request, read a paper on the treatment of chronic rheumatism (*Medical Record*, January 23, 1886). He merely alluded to chronic rheumatisms of the heart, pleura, membranes of the brain and spinal cord, of the eye, ear, throat, kidneys, uterus, etc., and quickly turned his attention to chronic rheumatisms of the joints.

Almost all rheumatisms are connected with an excessively acid condition of many of the secretions and excretions, including the saliva, perspiration, and urine; even the chyme and blood are less alkaline than they should be. Next is the excessive preponderance of fibrin in the blood, and the great and early destruction of red blood-globules.

Alkalies form the natural basis of the treatment of almost all rheumatisms, and the first question which arises is whether the potassium or sodium salts shall be used, or both. As the phosphates and potassium salts naturally predominate in the red corpuscles and in the formed tissues, while the chlorides and sodium salts are most abundant in the serum and plasma, and in all the infiltrating fluids of all the organs of the body, both potassium and sodium may have to be used; and they will so aid and compensate each other that neither will have to be given in excess. In chronic rheumatisms Dr. Peters preferred the milder and more tonic sodium and potassium salts, such as the phosphate of sodium, etc. This is a good and mild laxative when purgatives are required; it also lessens the acidity of the mouth, stomach, and bowels which is apt to be present,

renders the contents of the thoracic duct and the blood more alkaline, and makes the urine and perspiration alkaline. It also lessens the quantity of fibrin in the blood. It is a cooling and slightly antipyretic remedy, and may be used in strong or saturated solution as a local application to chronically swollen joints. In chronic arthritic rheumatism Charcot prefers the carbonate of sodium, of which he gives from 7 to 10 drachms a day, even to old and feeble women, and says he has never seen anæmia or any dissolution of the blood caused by it; on the contrary, his patients even grew stouter and stronger, possibly from the better digestion of sugar, starch, and fat which is caused by this and other alkalies. It also aids in the destruction of an excess of fibrin in the blood, and helps the liver in its great work of destroying fibrin.

Phosphate of sodium is a gentle and pleasant remedy, which may be given in about the way that citrate of potassium and Rochelle salts are usually given; the latter in $\frac{1}{2}$ or 1 ounce doses when laxation is required, and either in 1 or 2 drachm doses when their alkaline effects are more desired. It neutralizes all acids, even that which is abnormally present low down in the large bowels; and moderates the excessive acidity of the normal acid phosphate of sodium in the urine, and then helps to keep uric acid and the other urates in solution.

But potassium is the natural alkali of the red blood-globules, of the muscles, fibres, and all other formed and solid tissues; and citrate of potassium, and even Rochelle salts, which is a tartrate of sodium and potassium, may reach not only the serum of the blood, but the blood-globules and the parenchymatous structures, when rheumatism is firmly lodged in the latter.

Benzoate of sodium is another non-depressing sodium salt, although it is somewhat antipyretic when given in large doses. It is a solvent of uric acid, increases the elimination of urates in rheumatic lithiasis, and seems not only to convert uric acid into hippuric, but also to liberate a portion of the products of disassimilation in the form of soluble hippuric acid instead of insoluble uric. In delicate and sensitive patients benzoate of sodium may be given with aromatic spirits of ammonia, thus: Sodii benzoatis, 3vi; spts. ammon. aromat., 3vi; spts. myristicæ, 3vi; spts. chloroformi, 3ii; spts. gaultheria, ad 3vi. Dose, 3i to 3ii in water.

The hippurate of sodium has been suggested lately in doses of 5 to 30 grains. It tends to produce soluble urates. A favorite prescription with Granville is: Sodii hippuratis, 3ii;

glycerini, 3vi; aq. cinnamomi, ad 3vi. Dose, 3ii to 3viii, three times a day.

The tauro-cholate of sodium also holds uric acid in solution, and is said to render the stools characteristically rich in bile without causing purging. The usual dose is 3 to 6 grains, and it is said to be most useful in obese rheumatic patients, in whom the excess of fat slowly melts away. It is doubtful whether it is more useful than purified ox-gall.

The salicylate of sodium is only useful in the acute aggravations of chronic rheumatism. It does not destroy the rheumatic element in the blood.

Valerianate of sodium is declared by Granville to be very useful in weak and very sensitive patients. He even thinks its therapeutic value is decidedly greater than that of most of the other salts of sodium. It relieves the nervous trouble and hyperæsthesia of rheumatism and gout quite effectively, and he cannot help thinking that it also promotes the activity of the absorbents, thus tending to remove congestion, exudation, and even thickening and hardening about rheumatic joints. Usual dose, 1 to 5 grains.

It may be assumed that all the good that can be got out of sodium will be obtained by these preparations. Charcot always gives quinine, also, when he uses sodium or potassium in large and long-continued doses. Others prefer salicine as an anti-rheumatic tonic. Both prevent the excessive formation of uric acid. But the tartrate of potassium and iron is the best tonic against the anæmia and debility of chronic rheumatism. It is pleasanter and better than the muriated tincture.

But, as before said, the sodium salts only reach the liver and pancreas, the intestinal juices, the chyle and serum of the blood. They do not penetrate into the interior of the red blood-globules, nor into the parenchyma of the muscles and fibrous tissues, which the potassium salts do. The acetate of potassium, quickly supported by iron, is a most valuable remedy in subacute rheumatism, and especially in those forms which are liable to frequent acute exacerbations.

But citrate of potassium is a much more pleasant and less depressing remedy in very chronic cases.

There are, pathologically, two great varieties of chronic rheumatic joint-disease: 1, the fibrous; 2, the dendritic. In the fibrous form the tendency of all the exudations is fibrogenous. The inflammatory products or thick-

enings, instead of remaining in the soft and gelatinous stage of fungoid granulation, become firm and tough. The new cells are converted into fibres, and these harden and contract; even the inner surface of the synovial membrane is made hard. The normal dendritic growths of the villi are conspicuously absent, and in place of them are thick folds of fibrous tissue. The synovial membrane itself is infiltrated with fibrinous substance, composed entirely of fibre-cells, both fusiform and oval; only a few round cells are to be seen.

The favorite remedy for this state is the muriate of ammonia, administered as freely as iodide of potassium is often given. If fears are entertained that it will prove too debilitating, it may be aided by aromatic spirits of ammonia, or with quinine, or Huxham's tincture of bark; although Granville prefers the tincture of serpentaria, which he thinks has a specific effect. The muriated tincture of iron should not be forgotten.

Muriate of ammonia is a solvent and liquefacient remedy which tends to render all the secretions more abundant, while at the same time it reduces the plasticity of the blood, and destroys fibrin.

It acts upon the kidneys, and if long continued will cause emaciation, commencing first with absorption of fats and then of soft fibrin. It is used both internally and locally against fibrous thickening of the ligaments and tendons about rheumatic joints. Some go so far as to think it almost specific against all cirrhotic affections of the connective tissues. In chronic rheumatic synovitis it is said to break down all the exudations into a thin mucoid substance which is finally absorbed. It also has a powerful effect on the formation of urea: it is not only converted into urea, but helps to break down uric acid into urea, and aids in the excretion of both. It is also supposed to be really useful in so-called rheumatic neuralgias, when the fibrous sheaths of the nerves are involved. The dose is from 5 to 15 grains up to 150 grains a day.

Its great rival is corrosive sublimate, which may be given in doses of $\frac{1}{4}$ to $\frac{1}{16}$ or more of a grain, in Huxham's tincture of bark, or in the tincture of serpentaria.

The next great variety of chronic rheumatic arthritis, or synovitis, is the dendritic, in which the folds or fringes of the synovial membrane are greatly developed, so as to nearly resemble papillomata. For this sabina has been suggested, especially when it occurs in females at the menopause, or where there is decided

uterine derangement. Sabina once had a great repute, which was not undeserved, in chronic rheumatism and gout, for which it was employed both internally and locally to the affected joints.

Pulsatilla is a remedy which is supposed to act specifically upon almost all the mucous and synovial membranes, especially those of the small joints, and has a well-assured reputation in chronic rheumatism. It is most useful in subacute and chronic arthritic rheumatism when there is little or no fever; also in what is called rheumatic gout in females, with catarrhal and rheumatic disorders of menstruation.

But next to carbonate of sodium, Charcot prefers iodine to the muriate of ammonia and sabina; not iodide of potassium, but tincture of iodine, in doses steadily increased from 8 to 10 drops in twenty-four hours up to 30 to 60 drops. He gives it during meals in water slightly sweetened, or in a glass of Spanish wine, which he says is better. He continues it for several weeks, or even months, and says it never gives rise to symptoms of iodine-poisoning. Probably its effects are largely counteracted by the starch in the food. Granville also thinks iodine the most potent and suitable medicine to decompose urates in the blood, and says it relieves chronic rheumatic pains so promptly that he has rarely to use anodynes. But he always gives it combined with muriate of ammonia and chlorate of potassium, thus: Ammonii chloridi, \mathfrak{ss} ; potassii chloratis, $\mathfrak{z}\text{ii}$; tinct. iodinii, $\mathfrak{z}\text{ii}$; glycerini, \mathfrak{ss} ; aq., ad $\mathfrak{z}\text{xii}$. Dose, from a tea- to a table-spoonful two or three times a day. The taste of this mixture is more disagreeable than that of the tincture of iodine. One of the best prescriptions is that of Dr. Buckler, viz.: Iod. potass., gr. ii; iodid. ferri, gr. i; iodine, gr. $\frac{1}{16}$; ext. conii mac., gr. i. Make one pill, to be taken three times a day. These pills are easily taken, and are said to be particularly efficacious in chronic articular rheumatism, even where there is an anæmic, scrofulous, or syphilitic taint. The so-called nodosity of the joints has been successfully treated with iodine.

Arsenic is the great rival of corrosive sublimate, iodine, and muriate of ammonia in chronic rheumatism of the larger joints. Occasionally it produces marked amelioration, but it often fails, and is said to be useless in the most inveterate cases. It generally aggravates at first.

Phosphorus is a more reliable remedy in arthritis deformans, and phosphate of ammo-

nia forms more soluble salts with uric acid than any preparation of sodium or lime. Uric acid and the urates disappear rapidly from the urine made after its use, and pains and swellings of the joints are relieved as rapidly as from any preparation of sodium or potassium. It is fully equal to the other alkalies, and preferable to most of them in delicate and feeble subjects. It maintains a highly alkaline condition of the blood, has a distinctly alkaline reaction itself, and renders the urine alkaline.

THE EXTRACT OF MALE FERN IN TÆNIA.

BEHRENS eulogizes the extract of male fern as by far the most efficient anthelmintic of the pharmacopœia, and in the *Deutsche Medicinal Zeitung* of January 7, 1886, reports its successful employment in fifty-two cases out of fifty-three treated. Fifty patients discharged the tapeworm after having taken a single dose of 5 grammes (75 grains); of the three remaining patients, two discharged the worm after one more dose of the drug. In two instances the heads of the worms were found. This rather remarkable success in the treatment of tapeworm Behrens believes to be attainable only if a certain methodical procedure is observed. The patient is, on the preceding day, not allowed to eat anything after dinner excepting a salted herring in the evening; for the thirst thus occasioned beer is allowed. On the following morning the patient takes the drug on an empty stomach, according to the following formula:

R Extr. filic., 5.0 (75 grs.);
Gum. arab., 2.5 (37½ grs.);
Aque dest., 5.0 (1½ f3);
Syr. simpl., 15.0 (½ f3). M.
S.—Take at once.

A quarter of an hour after, 1 f3 of castor oil is taken.

This drug, which for its anthelmintic virtues has been known ever since the days of Pliny (who advocates its association with scammony), is well deserving of the author's praise.

In this connection it occurs to us that male fern, at the close of the last and the beginning of this century, formed an ingredient of several nostrums which enjoyed great repute for their vermifuge properties. It constituted the specific of Madame Nouffer, the widow of a Swiss military surgeon, who received eighteen thousand livres for the publication of its composition; later it was the Herrenschild remedy, and finally the specific of Matthieu, the Berlin apothecary, who sold it

to the Prussian government for the prize of a title and a pension. The medical college of Würtemberg likewise bought and paid amply for this therapeutic secret. In all these cases drastic purgatives were given, either along with or after the preparation of fern.

In *tænia lata* (bothriocephalus), or unarmed *tænia*, the drug is far more efficient than in *tænia solium*, or armed *tænia*; hence we find the drug especially esteemed in Russia, France, and Switzerland, where the former variety prevails.

So much stress is laid upon systematic administration of male fern by all who have used it most extensively, that we shall describe several of the most approved methods, as cited by Stillé. Wawruch treated two hundred and six cases, nearly all of *tænia solium*, according to the following plan:

Preparative Treatment.—During four to five days a solution was given every day containing 20 grains of chloride of ammonia, the patient meanwhile taking no food but a thin broth at each meal.

Expulsive Treatment.—The night previously a simple injection was given. The following morning a bowl of thin soup without salt was eaten, followed in an hour by two ounces of castor oil in two doses. In the interval between these from $\frac{1}{2}$ to 1 drachm of powdered male fern was given in two or three doses, and an enema of milk and oil. Some time after the last dose of fern a drastic purge of calomel and gamboge was given, and under its operation the *tænia* was generally discharged. This method occasioned a good deal of pain, and often vomiting, rendering the use of emollients and narcotics necessary.

The treatment of Albers, of Bonn, and which proved successful in a large number of cases, was almost exactly the same as that just described, except that the ethereal extract was the preparation of fern employed. Lambert preceded the administration of the fern by a diet of herring, onions, and similar crude articles. Trousseau's method, which, he states, was very successful, is as follows: First day, absolute milk diet; second day, 15 grains of the ethereal extract of male fern to be taken fasting, and repeated every half-hour until four doses are taken; third day, repetition of the extract as on the preceding day. After the last dose about 2 ounces of syrup of ether, and, in half an hour later, an emulsion containing 3 drops of croton oil.

Peschier used the oil (volatile extract), and in doses of from 8 to 25 drops, and cured one hundred and fifty cases in a short

time with it. Ebers, of Breslau, uses the alcoholic extract; Fouchon, of Neufchâtel, the oil in gelatin capsules. The simple powdered root, however, is probably the most eligible preparation.

NEW PURGATIVES.

A few years ago, Dr. Noel Gueneau de Mussy communicated to the Academy of Medicine Professor Rutherford's researches on different medicinal substances. M. DESNOS, according to the Paris correspondent of the *British Medical Journal* (January 2, 1886), has tested these experiments on four different bodies,—baptisin, sanguinarin, juglandin, and phytolaccin. They are all resinous extracts from American plants. They are brown-red powders, very hygrometric, and have a saltish taste. M. Desnos used them in the form of pills of from 5 to 10 centigrammes ($\frac{3}{4}$ to $1\frac{1}{2}$ gr.). Baptisin was administered to fourteen patients; sanguinarin to four; juglandin to thirteen; and phytolaccin to seventeen. The patients did not remain in bed all day, in order not to encourage constipation. The general dose was 30 centigrammes (about 4.6 grains) daily, administered in two separate doses. If more were given, a third dose was taken at eight o'clock at night. The patients generally had a stool the following day or night. In the case of patients habitually constipated, they gradually had regular motions. Baptisin in doses of 30 centigrammes was regular in its action, but frequently provoked colic. Sanguinarin, considered by Professor Rutherford as a never-failing cholagogue and purgative, was perfectly inert, though given in doses of 60 centigrammes. The action of juglandin, Dr. Desnos says, is the same as that of baptisin. In two patients, after it had been administered, the stools contained blood; one was convalescent after typhoid fever, and the other was rheumatic and dyspeptic. Phytolaccin, given in doses of 10 or 20 centigrammes, is regular in its action, and is not accompanied with colic.

TREATMENT OF ACUTE PROSTATITIS WITH VERY HOT WATER.

The singular though incontestable experience that in many inflammatory processes both heat and cold, though agents with diametrically opposed properties, possess often equal curative virtues, finds an apt illustration in the affections of the genital organs. In orchitis, for example, the ice-treatment enjoys

great repute. In prostatitis, however, better results have been obtained with hot water.

In the *Gazette Hebdomadaire* of January 1, 1886, DR. RECLUS recommends compresses plunged in hot water and hot water enemata as the *par excellence* treatment of acute prostatitis. Reclus selects of the numerous cases thus treated the following as especially suitable to represent the advantages of this treatment :

1. A physician, æt. 31, called for treatment on account of a dysuria vesicalis appearing at the end of a blennorrhœa.

Examination of the parts revealed an enormous tumefaction of the prostatic gland, which was felt as a large tumor by the finger inserted in the rectum. There was intolerable pain before and after micturition. Compresses immersed in very hot water and rectal hot water injections were ordered, and almost instantaneously considerably diminished the pain, the vesical tenesmus, the tumefaction of the gland, and the other inflammatory symptoms. In three days a complete cure was effected by these simple appliances.

2. A professor, æt. 56, called for treatment on account of a prostatic trouble necessitating urination every couple of minutes, especially at night. As in the former case there was tenesmus of the bladder, and also of the rectum, great pain and enlargement of the prostatic gland, which could be found beating under the finger inserted into the rectum. Again the compresses were ordered to be applied to the perineum, and the injections to the rectum morning and night, and resulted in an immediate improvement and a complete cure within a few days. Both pain and the desire for frequent micturition never returned until a relapse occurred a year after, provoked by dietetic errors committed during a scientific congress, when the same means proved again successful.

3. A young man was treated for a neuroma on the mastoid portion of the temporal region, when, after removal of the tumor by the bistoury and the healing of the wound by first intention, suddenly, no doubt by some metastatic process, a prostatitis set in. Retention of the urine ensued, which rendered the use of the catheter necessary, which of course was very painful. The hot water treatment was ordered, and relieved in the course of four days both pain and tenesmus permanently.

This equally simple and energetic treatment cannot be too well recommended as an efficient means to allay the inflammatory process, no matter whether of a circumscribed or

a diffuse nature, and to prevent subsequent suppuration.

CHOREA SUCCESSFULLY TREATED WITH HYOSCYAMINE.

In a clinical lecture recently delivered in the Pennsylvania Hospital by PROF. DA COSTA (*Med. Times*, January 23, 1886), a patient was exhibited, suffering from what Dr. Da Costa described as the worst case of chorea that he had ever seen. The patient was a boy about 11 years old, pale and weakly, and described by his friends as having always been nervous.

Four weeks before the date when he was admitted (on the 14th of December) he had an attack of acute rheumatism, which involved all the larger joints of his body. The rheumatism lasted about three weeks, but as it declined choreic symptoms began to be manifested. His hands and arms were first affected, and afterwards his legs.

When admitted, he was actually unable to walk ; he was even unable to feed himself, and seemed in risk of starvation. He was wretchedly weak and emaciated. He could perform no co-ordinated movements with his arms or legs, and unless there was always somebody about to give him a drink of water and food he would have perished. This was not due to actual want of power in the muscles, but to the impossibility of performing any voluntary act requiring co-ordinated movements ; yet when food was placed in his mouth deglutition was readily accomplished. When admitted he could not speak, he could not articulate a word. He could not put out his tongue, although he could open his mouth and move his jaws, but he could not ask for food. His expression was that of an imbecile, and he was reduced to a mere shadow.

At first his arms and legs were constantly moving, both sides being equally affected. No power of grasp existed in his hands, though sensation did not seem impaired. He complained of pain when he was pinched. The patellar reflex was normal, and not exaggerated. No marked change in the electrical reactions was observed. His pupils were very much dilated ; his pulse was only 50 per minute, and rather weak ; there was a systolic mitral murmur heard at the apex. These involuntary muscular movements did not continue at night, when he was asleep. His urine had been examined, but neither albumen nor sugar was detected. His bowels tended to constipation.

The ordinary remedies for chorea act

slowly; arsenic, though one of the best of our therapeutic agents for this disorder, acts slowly; it takes time, and the loss of time here might be fatal. Dr. Da Costa then recalled a case of tremor which he had seen rapidly influenced by hyoscyamine, the active principle of *hyoscyamus niger*. He concluded to try it here. He ordered him to take $\frac{1}{100}$ grain to begin with, a decided dose for a boy of his age; but, not finding any marked influence, he concluded that it would be advisable to increase the dose to $\frac{1}{80}$ grain, given three times a day. Now the effect was admirable. From the first few days the boy began to improve, and at this time he had some dryness of the throat and wanted his mouth frequently moistened. He soon became brighter in his mind; he took more interest in what was going on; he moved voluntarily in bed, and tried to help himself to food. His voice also returned, and he left his bed and began walking around the ward. After this his recovery was rapid and uninterrupted. He has had no other treatment than the hyoscyamine, and he has now so much improved, though he is still somewhat pale, that he may be looked upon as having recovered. He can sit quietly; he has power over his hands, both in co-ordination and in grasp, although his grasp is still a little feeble. He walks and stands now without falling. His pupils are dilated, although not much.

The systolic apex-murmur persists: it is a chronic mitral regurgitant murmur. In every other respect the boy is nearly well.

Dr. Da Costa then referred to one or two points of clinical interest in connection with this case: first, some points which have nothing to do with the treatment; and, secondly, some which bear upon the treatment.

In the first place, this attack of chorea was clearly of rheumatic origin. It came on at the end of an attack of acute rheumatism. It is true that the boy was previously feeble and ill nourished, and that he was regarded as a nervous child; but the association of chorea with rheumatism is too close a one for us to regard it here as a mere coincidence. You can generally trace, in a case of chorea, a strong rheumatic element, either inherited or acquired. In this form, before the patient has left his bed or his attack of rheumatism is clearly over, the chorea is manifested: which makes the connection still closer. Now, it has been thought that there is an embolic process at work in the smaller blood-vessels of the motor centres in the brain and spinal cord; small vegetations which are formed

upon the valves are washed into the arteries supplying the motor tracts, especially the *corpora striata*, and the subsequent disturbances of nutrition give rise to the irregular, unco-ordinated muscular movements. This is a plausible and ingenious theory; yet it is hardly sufficient to account for all the features of the disease. There must be some want of stability of the motor centres, independent of the coarse lesions resulting from embolism, the evidence of the existence of which, moreover, is not complete, and which is certainly not constant.

In the case reported there was no voluntary control over the muscles, and at the same time the mind seemed to suffer: he was almost an idiot. When admitted, his temperature was $98\frac{1}{4}^{\circ}$: therefore the attack of rheumatism was over, and these symptoms were not due to a fresh outburst of the rheumatic affection. The want of power in these muscles must also be taken into consideration, as showing a close relation between chorea and paralysis.

Now, coming to the question of treatment, the influence of the hyoscyamine, which was suggested by analogy from the treatment of tremor, was here strikingly manifest. The dose was increased from $\frac{1}{100}$ to $\frac{1}{80}$ grain without any bad effects; but when he was taking this quantity he complained of some dryness of the throat, although it never was so severe as to require us to reduce the dose again. It was finally discontinued two days ago. Now he is perfectly steady and can control his movements; his tongue is clean and he has a good color; he is gaining flesh: indeed, he may be considered as well.

Did the hyoscyamine produce the striking effect, or did the rest in the hospital do it? That rest is good in all and can cure many cases of chorea, is admitted; but the improvement here was too sudden—coming on in three or four days—and too great to be attributed entirely to the good nursing and the food which he received since he was admitted. It is claimed that hyoscyamine is a valuable antispasmodic and exercises a remarkable control over muscular movements; also that with the control of the movements the condition of the muscles is improved and all the functions increased. Even the blood has improved; for, though he is still anæmic, he is not so much so as he was. Within a week after beginning the treatment he was out of bed and walking around, but not so well as at present.

What shall be given further? Will not the condition remain? Not necessarily; for all

the irregular muscular movements have ceased. He can take, however, for his anæmia, the elixir of the pyrophosphate of iron, a drachm three times a day, and stop the hyoscyamine as having accomplished its purpose.

ON FERMENTS IN THE URINE.

In the *Archiv für die gesammte Physiologie* (vol. xxx. No. 8, p. 35) we find a publication of DR. GEHRIG, which informs us of the results of his numerous experimental observations on the constituents of urine.

We abstract the following conclusions :

1. Normal human urine contains nearly always pepsine, trypsin, and a diastatic ferment in varying proportions.

2. The influence of ingested food on the relative and absolute quantities of excreted ferments is shown by diminution of pepsine and trypsin, and an increase of the diastatic ferment. The former reach a minimum in three to four hours after a meal, the latter a maximum.

3. In the normal urine of dogs all three ferments are found in appreciable quantities, the diastatic ferment, though, in the smallest proportion.

4. The relative and absolute quantities of all three ferments show a minimum several hours after feeding.

5. The normal urine of rabbits shows, after ample nutrition, always small quantities of trypsin and diastatic ferment, but only traces of pepsine.

6. After fasting for not too long a period the urine of men, rabbits, and dogs shows all three ferments in ample relative and absolute proportions.

MASSAGE IN THE TREATMENT OF INFANTILE PARALYSIS.

The advantages of this method of treatment lately formed part of a lecture by DR. MURRELL (*Med. Press and Circular*, December 23, 1885) on the above disease, and as it includes some important modifications in the ordinary manner of conducting the operation, it may be worth while to draw attention to it. After treatment during the acute stage by means of aconite, followed later on by physostigma and phosphorus, recourse is advised to a carefully graduated system of massage, commencing with simple *effleurage*, or surface rubbing, followed by the friction, which is a more energetic application. As the case proceeds, kneading of the affected limbs or muscles is

resorted to, and this is succeeded by or combined with systematic *tapotement*, which is a form of percussion. This plan of treatment, conscientiously carried out, has, when the case has not been too long delayed, been followed by excellent results, but it should only be done by the advice and under the care of the medical attendant, as indiscriminate massage is likely to be futile, and may be injurious. The operation should be conducted with dry hands on a dry skin, and all oily or other unctions studiously avoided.

INOCULATION OF TUBERCULAR MATTER IN ANIMALS.

DR. COLIN, of Alfort, has been engaged a number of years in experiments of inoculating animals with tubercular matter. In a note communicated to the *Gazette Hebdomadaire* of January 1, 1886, he states that the entrance of the tubercular matter into the absorbent apparatus determines both the ensuing lymphatic affection and the subsequent visceral implication. The former is not generalized, but always limited to the portion of the body in which the matter was originally introduced. The circulatory channel was in every instance found to be the way of the progressive tubercularization of the animal.

VIOLINIST'S CRAMP TREATED SUCCESSFULLY BY ELECTRICITY.

DR. ADOLPHE WAHLTUCH, Honorary Physician to the Hulme Dispensary, Manchester, reports in the *British Med. Journal* for January 2, 1886, the case of a young woman, aged 19, who consulted him in July, 1885. She had been learning to play on the violin since she was 12 years old ; and during the last twelve months, whilst practising a short time, she felt obliged to stop on account of a painful cramp in the upper left arm and right wrist. On examination he noticed that she could not raise her left arm as high as she did the right one. In getting the violin in the proper position, the cramp and pain manifested themselves in the left deltoid, biceps, and pectoralis muscles ; the right hand holding the bow soon felt unable to do so, owing to a weakness in the wrist. In every other respect she enjoyed very good health. The treatment consisted in applying, three times a week, a continuous current of galvanism to each of the affected muscles, separately, for five to ten minutes at a time, using from five to fifteen Leclanché cells. To the right wrist he at

first used the faradic, and, later on, the continuous current. In all, nine applications were made within three weeks, when all unpleasant symptoms ceased. She was seen three months later, when she stated that she could practise then for several hours daily without experiencing any inconvenience whatever.

In looking up medical literature, Dr. Wahl-tuch was unable to meet with any record of cases of "violinist's cramp." This affection, though rare, yet belongs to a group of spasmodic diseases, among which the most familiar is that of "writer's cramp." Benedikt mentions a case of "knitter's cramp," and "tailor's cramp;" Watteville, "telegrapher's cramp;" Dupuytren, "coachman's cramp;" Henoch, "nailsmith's cramp;" Basedow, "milkmaid's cramp;" Clemens, "shoemaker's cramp;" Kunze, "typesetter's cramp;" and various authors, "pianist's," "painter's," "seamstresses," and "writer's cramps." No doubt, violinist's cramp is an analogous condition, having the same general characteristic,—namely, the recurrence of spasm or pain in a special group of muscles, when called upon to execute a series of combined special movements. It is a disturbance of co-ordination, caused by overexertion. The treatment generally consists in allowing temporary rest to the muscles implicated, and also rational and harmonious local gymnastics. But the most effectual results are obtained by the use of electricity. In the case mentioned above, violin practice was not stopped altogether during the treatment; the patient was allowed to practise for a very short time every day, and advised to play tennis, to write, to paint, and generally to use her hands in a variety of occupations.

ON SCANTY NITROGENOUS DIET IN DIABETES.

In a note of BOUCHERON appearing in the *Comptes Rendus* of December 14, 1885, we find some valuable dietetic hints for diabetic patients.

Boucheron refers to the fact that numerous diabetic subjects have also a gouty diathesis, and habitually indulge in food rich in albuminoids and in fermented beverages. The experiments of numerous observers prove that an exclusive albuminoid regimen leads to glycosury in the liver, and to a diffused glycosury in the entire organism. In dogs fed for some months exclusively on meat, glycogen is elaborated at expense of the in-

gested albuminoids. Albumen hence produces sugar just as well as the hydrocarbons, only the latter fact is better known.

In diabetes mellitus the sugar produced by albuminoids is equally, if not more, deserving of our consideration than the sugar derived from the hydrocarbons. Albuminous diet consequently increases the sugar-production in diabetic patients, and is to be cut short as much as possible, not only with the view to reduce and avoid glycosury, but also to diminish the nitrogenous products (urea, uric acid, and ptomaines). Abstinence of hydrocarbons alone will consequently not be the only indication in diabetes.

THE EXPLORATION OF THE UTERINE CAVITY IN CASES OF METRORRHAGIA.

At the meeting of the British Gynæcological Society, held on December 9, 1885 (*British Med. Journal*, January 16, 1886), DR. EDIS read a paper on this subject. The author desired to draw attention to the urgent necessity of this proceeding when dealing with cases of severe persistent or recurrent uterine hemorrhage. The subject was one of great interest, and often one of great anxiety to the practitioner. There was a tendency to treat metrorrhagia as if it were a special disease, in place of regarding it merely as a symptom of many and various conditions. A correct diagnosis was the first and most important element of successful treatment, which otherwise was mere guess-work. Speaking generally, there was almost invariably some local cause when the hemorrhage was really severe. Cardiac, hepatic, or renal disease might be present as a complication, or independently, and should always be taken into consideration. Uterine hemorrhage might be aggravated by the injudicious use of alcoholic stimulants; more especially was this the case about the time of the menopause. The author had repeatedly witnessed cases where the mere abstention from alcohol had been sufficient to arrest a profuse hemorrhage, which had been going on for months, and threatened even the patient's life. In attempting to form a rational diagnosis, it was of great importance to get a careful and exact history of the details of the case. Before proceeding to local investigation, the heart, lungs, liver, and other organs should be carefully examined, and inquiry made into the habits of the patient. A careful pelvic exploration should follow. Then if, after consideration of all the facts of the case, the

presumptions were, everything else being excluded, that there was some intra-uterine complication, the practitioner was not justified in allowing the patient to go on bleeding indefinitely without giving her the benefit of further assistance. The author, in general, effected dilatation by dividing the cervix with the metrotome or scissors, either alone, or in conjunction with the employment of tents or other dilators. It was advisable, after operation, to irrigate with some appropriate antiseptic lotion, morning and evening, for a few days. In cases of persistent hemorrhage, due to retention of the placenta, following a miscarriage, the cervix generally remained sufficiently patulous, or was so readily dilatable, that no difficulty was experienced. Where, however, only a small portion of the placenta had been retained, and the case allowed to go on for several successive weeks or even months, the cervix might be found so contracted as to necessitate the introduction of laminaria-tents overnight. In such cases, incision should never be resorted to, this method being reserved exclusively for cases of small fibroid or fibroid polypi in the interior of the uterus. The author related several interesting cases to exemplify his meaning, and to show that, until the cavity of the uterus had been explored, a correct opinion could not be formed as to what method of treatment should be adopted. He would lay stress upon the importance of dilating the cervix and exploring the interior of the uterus in all cases where hemorrhage from the organ persisted unnaturally, and where the ordinary medicinal agents failed in affording relief, and there was no evidence of any condition external to the uterus sufficient to explain the persistence of hemorrhage.

DR. AVELING had observed that, in cases requiring dilatation where something existed in the uterus capable of being removed, the cervical canal was either dilated or dilatable; this peculiarity had been noticed by Harvey. In these cases, he preferred to use his own dilators. Where the os was rigid and contracted, a more gradual method was better.

DR. ROUTH believed that Dr. Edis's paper was eminently practical, but he took exception to one or two points. As to rapid dilatation of the uterus, it did not always succeed when the uterus was rigid; and after all it was not a rapid, but a long and tedious process, requiring an anæsthetic. He preferred the sea-tangle-tents used with proper precautions, and always collected and prepared his own. In regard to those cases of metrorrha-

gia in which nothing could be found after exploration, it should be remembered that an ulcerated or excoriated condition of the mucous membrane need not be restricted to the os or external portion of the cervix, but might extend up the uterine cavity. It was quite in keeping to suppose that a congested state of the liver would have the same effect on the uterine mucous membrane as was the case in piles, causing them to bleed and enlarge. The last objection he could take was to the incision of the cervix. The danger to the patient from septic poisoning was greatly increased by such a measure.

DR. BARNES thought no law in therapeutics more clear than that which dictated direct examination of an organ at fault if it could be effected. The endeavor to do so was made, in the case of other organs, by percussion and auscultation. The uterus offered the incontestable advantage of being directly accessible. A narrow condition of the os externum was a frequent factor in cases of hemorrhage. Great benefit was often derived from simply enlarging this opening by a strictly limited incision. The immediate effect was to relieve local engorgement. It also afforded a ready escape for imprisoned blood-clots and mucus, and gave free access for exploration and the application of topical remedies. It was also useful in many cases of intra-uterine polypus and fibro-myoma of the body of the uterus.

DR. THOMAS SAVAGE found Hegar's dilators to be very unsatisfactory. Laminaria-tents were much more efficient, but were sometimes followed by disastrous consequences. In several cases in which he had suspected a portion of the ovum to be left behind, he had thoroughly swabbed out the uterine cavity with pure carbolic acid, and found that such a course would often prove sufficient for cure.

DR. BANTOCK was compelled to dissent from Dr. Edis on one or two minor matters. He did not approve of incising the internal os after partial dilatation for the purpose of removing a small fibroid tumor, because it would be impossible to control the subsequent extension of the laceration of the divided tissues consequent on the forcible extraction of such a hard body as a fibroid tumor. He had met with cases exactly corresponding to those narrated by Dr. Edis, and it was quite easy for him to support his views. He thought it was a mistake to mix glycerin with iodine or carbolic acid when the full effects of either remedy were desired, for in both instances the caustic effect was in this way reduced to a

minimum, if not wholly removed. Especially was this the case with carbolic acid. He was not prepared to assent to the doctrine that a cervix which was the subject of even extensive disease of a non-malignant character, but the result of chronic catarrh, etc., should not be subjected to dilatation. These were just the cases in which he obtained the most satisfactory results from dilatation and the subsequent daily introduction of a strip of lint saturated with glycerin for ten to fourteen days.

MR. LAWSON TAIT considered the use of sponge-tents to be, of all the methods of dilatation, the most dangerous, and had long since given them up. Hegar's dilators he considered extremely risky, and their employment was as exhausting for the operator as for the patient.

COCAINE IN LARYNX, PHARYNX, AND NOSE.

DR. DESSAR epitomizes his experience with cocaine in the larynx, pharynx, and nose in the following aphorisms (*Deutsche Medicinal Zeitung*, January 7, 1886):

1. Cocaine reduces the sensibility of those parts, even in existence of hyperæsthesia, to such an extent that the laryngoscope and rhinoscope can be employed with ease.
2. Reduction of pain, especially in operations.
3. Removal of pain and difficulty in swallowing in presence of a stenosis depending upon tumors in phthisis, syphilis, perichondritis, and tonsillitis.
4. Ischæmia in case of strongly injected mucous membranes.
5. Diminution of profuse hemorrhages.
6. Insurance of diagnosis in reflex neuroses of the nose. For purposes of examination a five per cent. solution is sufficient; for those of cauterization of the pharynx, nose, and for the removal of deglutition-difficulties, a ten per cent. solution, and for laryngeal operations a twenty per cent. solution, are required.

THE EFFECTS OF A HEAVY DOSE OF SALICYLATE OF SODIUM.

We have a number of times referred to the untoward effects produced by salicylate of sodium when given in large doses, and DR. JULIAN J. CHISHOLM, in the *Maryland Med. Journ.*, January 30, 1886, is able to confirm the experience of others in this respect. He states that he has been employing the salicyl-

ate of sodium for the treatment and relief of painful attacks of neuritis, whether specific or rheumatic in nature, and he has found that it will subdue pain and remove congestions of the eye-tissues more rapidly than any other remedy he has tried. In a dose of from 25 to 30 grains, given every four hours, the beneficial effects are often magical. Patients who could not sleep on account of pain in the eye, notwithstanding leeching and the local use of atropine and the administration of iodide of potassium and mercury with opium, have obtained complete relief before a half-dozen doses of sodium powders have been taken. The eye-pain and eye-congestions vanish, and convalescence seems to be very well established after a few doses of the salicylate. When, however, the remedy is pushed for any length of time, it sometimes produces headache very similar to that produced by quinine, possibly even in a more severe degree. Recently, however, through the mistake of a druggist for reading 4 drachms as 4 ounces, a patient received in one powder 192 grains of the salt instead of 24 grains which were ordered. Very shortly after taking the first powder his head felt full and his ears commenced to buzz. He became weak, was nauseated, and had to go to bed. At six o'clock, four hours after taking the dose, diarrhœa set in, and one hour later he vomited. The night was passed in such miserable wretchedness that a second powder was not administered. The next day the brother of the patient came to explain to Dr. Chisholm the effects which the powder had produced, and brought him one of them for examination. He reported the patient now relieved of nausea and diarrhœa, but too weak to get out of bed. The eye no longer gave him pain. He did not know at what time relief came, as his other more pressing annoyances were all-absorbing. He got out and to my office in three days after the dose was taken. All pain and injection of the eye had disappeared. The cloudy vision had nearly gone, and no further eye treatment seemed necessary. The case is instructive in many ways, and offers comfort to many practitioners who prescribe ʒi doses of the salicylate of sodium with hesitation, fearing bad effects from what they believe to be so large a dose. This dose of 192 grains, dissolved in a half-tumbler of water, had caused diarrhœa before vomiting, which did not take place until five hours after the medicine had been administered. We might, therefore, fairly believe that after five hours not much of the drug remained in the stomach to be ejected, and that

the effects produced represent the degree of depression which so large a dose can occasion. The symptoms could not have been alarming, as it was not thought necessary to call for advice till the next day, when only a general debility remained.

ON SUGAR IN THE URINE AFTER FEEDING WITH CANE-SUGAR.

SEEGEN publishes in *Pflüger's Archiv* (xxxvii. p. 342) the following results of his experiments on dogs. Being fed with cane-sugar, the animals excreted all sugar with the urine as represented by the following table :

SUGAR.			
	Ingested. Grammes.	Excreted. Grammes.	Per cent.
Dog I.	520	15.2	3.0
" II.	560	22.0	4.0
" III.	480	7.0	1.9

THE TREATMENT OF PROFUSE HÆMOP-TYSIS.

In discussing the treatment of hæmoptysis, of course only the cases in which the hæmorrhage is profuse need to be considered, for slight hæmoptysis requires no definite treatment. In the treatment of the serious form the general methods employed must be the same as that for profuse hæmorrhage from other parts of the body ; and although containing no new points, the paper recently read by DR. SAMUEL WEST before the Medical Society of London (*Brit. Med. Journ.*, January 16, 1886) contains the most successful methods, brought together in such a succinct way that it is worthy of being laid before our readers. Dr. West shows that rest, absolute of the body as a whole and of the diseased part so far as possible, is the main essential principle ; and with this object in view the patient should be kept in a recumbent position, speaking prohibited, cough checked, and excitement avoided, or, if present, controlled by drugs. These indications are best met by the use of opium, which Dr. West regards as indispensable in most cases of hæmoptysis. Of the so-called hæmostatic remedies two groups may be formed,—the topical astringents and the vascular constrictants. Chief among the former are the perchloride of iron, alum, gallic and tannic acids, and acetate of lead ; but, powerfully as these remedies act when applied to the bleeding surface, it is difficult to see how they can produce the same local effect when administered by the mouth, for it is hard to comprehend

how a few minims of dilute solution introduced into the stomach can produce an effect which the undiluted solution can effect only when applied directly to the bleeding surface ; consequently, if they act at all, it must be by producing vascular constriction. Of the groups of remedies which produce vascular contraction, digitalis and ergot are the most prominent examples. Both of these drugs produce contraction of the peripheral arteries, and if hæmoptysis were due to capillary oozing they might possibly arrest the hæmorrhage ; but we know that hæmoptysis is not due to capillary oozing, but to lesions of fairly large vessels. Hence these remedies, instead of being useful, may be even dangerous, and increase the hæmorrhage. Hæmoptysis always tends to stop itself, from the fact that the blood-pressure is reduced from the loss of blood, and the greater the reduction the greater is the tendency to form a clot. This fact has long been recognized, and therefore one of the early standard methods of treatment of hæmoptysis was to produce hæmorrhage from other parts by free blood-letting ; and although blood-letting is now believed to be indicated in but very few cases, an attempt may be made to reach this end, not by removing the blood from the body, but by detaining it in some part of the body distant from the seat of the hæmorrhage. This may be, to a certain extent, accomplished by extensive dry cupping, or by dilating some of the vast vascular systems of the body, and making them act as temporary reservoirs for the blood. This might possibly be accomplished by producing purgation, or the cutaneous system might possibly be dilated through pilocarpine, or even nitrite of amyl ; however, the possible objection to the use of these drugs is they dilate the vessels of the lungs as well. Then, again, the blood-pressure may be influenced through the heart, as by use of cardiac depressants, of which antimony is the most reliable ; while, lastly, diet is of the very greatest importance. The principle of absolute rest and restricted diet should be applied in all cases of hæmorrhage. It is thus seen that without giving a long list of drugs, or discussing in detail the various methods of treatment of hæmoptysis, Dr. West indicates the conditions which have to be fulfilled and the essential principles which should guide our choice of remedies. Our treatment of hæmoptysis is as yet extremely unsatisfactory, and perhaps the following out of some of the lines of treatment suggested above may lead to valuable results.

EXPERIMENTS WITH NUMEROUS DRUGS ON THE BACILLUS TUBERCULOSIS.

If Koch's bacillus tuberculosis is actually the cause or infectious agent of tuberculosis, the labors of SORMANI and BOGNATELLI to ascertain the effect of various drugs on the microbe are in the right direction to possibly advance the therapeutic aspects of this affection. We abstract from their papers, "*Ricerche Sperimentali sui Neutralizzanti del Bacillo Tubercularia Scopo Profilattico*" and "*Ulteriori Ricerche sui Neutr. del Bac. Tuberc.*," Milano, 1885, simply their general conclusions.

Both authors tested a number of chemicals, especially such which could be therapeutically considered as to their influence upon the vitality of bacillus tuberculosis. One c.c. (16 gtt.) of sputum, in which the presence of a large number of bacilli was previously ascertained, was, under the ordinary precautions, mixed with a certain quantity of the drug to be tested, the mixture preserved at a temperature of 35° to 40° (C.) one to two hours, then mixed again, and by means of a disinfected syringe injected in the abdominal cavity of guinea-pigs. These animals, unless they died sooner, were killed after two to three months and examined for bacilli. A large number of drugs showed no or a very slight pertinent action. An appreciable antibacillar effect was obtained from the following drugs in an ascending order: lactic acid, camphor, bromide of ethyl, naphthol, turpentine, chloride of palladium, creasote, carbolic acid, and corrosive sublimate. The following drugs showed likewise some antibacillar virtues: benzine, toluol, oil of caraway, essence of cloves, guajak, chinolin, menthol, and creasote.

ACUTE PROSTATITIS WITH DISCHARGE OF HYALINE CASTS.

At a meeting of the Clinical Society of London, held January 8, 1886, SIR ANDREW CLARK read an account of a case of acute prostatitis which was accompanied by a discharge of hyaline cylinders resembling renal tube-casts (*Medical Press*, January 13, 1886). A medical man in average health was suddenly seized with pains in the limbs and loins, there was frequent desire to pass urine, and scalding when it passed, with pain at the anterior extremity of the urethra. The urine rapidly became bloody, accompanied by much dysuria and tenesmus. No evidence of disease other than that in connection with the urinary organs could be discovered. The

urine, examined by the naked eye immediately after its discharge, exhibited numerous minute thread-like fragments. Under the microscope they were seen to consist of hyaline cylinders, in several instances covered by patches of leucocytes. On standing, the urine deposited a mixed sediment in a thin even layer. The specific gravity of the urine was 1022, its reaction acid, and it was slightly albuminous. The sediment contained uric acid crystals, oxalate of lime, blood-disks, patches of epithelium from the bladder, leucocytes, flask-shaped hyaline bodies, and hyaline cylinders. The crystalline constituents appeared to have been formed in the urine subsequent to its discharge. On examination per rectum, the prostate was found much enlarged, and very tender to the touch. The patient was soon after seen by Sir James Paget, and the symptoms of the local disorder had become aggravated. By degrees, the uric acid, oxalate of lime, and larger hyaline casts disappeared from the urine. A small quantity of albumen, however, remained, and on standing, the sediment showed much mucus and small hyaline cylinders with flask-shaped hyaline bodies. After eight days' illness, at the close of micturition there was discharged a pultaceous mass of mixed mucus and phosphates, and this discharge continued for nearly a fortnight in steadily diminishing quantities. The patient entirely recovered after being ill a little more than a month. During the last six years the only symptoms that have arisen have been such as he himself ascribes to imperfectly developed gout. The important point in these cases is the discharge through the urine of hyaline moulds of the vesicles, and smaller ducts of the prostate. Before finding the connection between the cylinders and the flask-shaped bodies, Dr. Clark was inclined to think the latter originated in the kidney, but further study of the case, and two others similar to it, and examination of the prostate after death, have convinced him of their prostatic origin. These cases with prostate casts in the urine may be only curiosities of medical experience, but since in none of the standard works on urinary affections, in no monographs dealing with diseases of the prostate can any reference be found to the discharge of hyaline cylinders in prostatitis, and without careful examination they might very easily be mistaken for cylinders originating in the kidney, the case is certainly of sufficient importance to bring it before the notice of the profession.

MR. BRYANT said it was pleasing to see a physician taking an interest in a case which

we usually considered as belonging rather to surgical diseases. We could recognize by the eye these bodies in prostatitis, but there was no microscopical evidence that they were casts of the prostatic ducts themselves. He would like to ask Sir Andrew Clark in what way we could be saved from the fallacy of mistaking these casts for renal casts.

DR. GREENFIELD, of Edinburgh, said it was his misfortune to have arrived too late to hear the whole of Sir Andrew Clark's paper, and he felt he must apologize for venturing to speak on the subject, but he thought he could raise some parallel cases. He had seen lately four cases with concretions exactly like those found in prostatitis, concretions which resembled corpora amylacea. The cases consisted of two girls, a young woman, and a boy æt. 7. In the boy these bodies appeared in the urine intermittently. In the females, they also appeared from time to time. In one case he had found after death a large number of these bodies in the kidney. They varied much in character; some were small and hyaline with fine lamination, some gave a deep stain with carmine, some with magenta, and some with iodine. The subject was a comparatively new one to him. He had not come across these cases often. He merely brought these cases forward as presenting a condition worthy of being considered side by side with prostatic concretions in the urine. He had found these bodies recently in two cases of cancer. He thought they might occur widely in many pathological conditions.

DR. GLOVER asked whether the patient had a well-defined attack of gout?

SIR ANDREW CLARK in reply said no, but the patient considered himself gouty. He presented symptoms of a varying kind which he (Sir Andrew Clark) thought could only be assigned to the circulation of acid in the blood. The question which his paper suggested was by what means can we distinguish hyaline casts or cylinders as coming from the prostate gland or from the kidney. He thought the case upon the first examination to be one of acute nephritis. The cylinders looked exactly like those occurring in acute renal congestion, but upon a second investigation he found some little flask-like bodies attached to the hyaline cylinders. The prostate was troubled. The urine was healthy, plus a little albumen. He felt it was more a case of prostatic disease. He had not published the case at the time (some years ago), as he was anxious to discover if any other symptoms showed themselves. Nothing had, however, arisen. In

other cases he had seen symptoms of a similar character. To Mr. Bryant's question his answer was, you could not discover the nature of the cylinders from their aspect, you could not even be sure if the prostate was their seat of origin unless you found these hyaline moulds associated with the hyaline cylinders. In women's urine he had always found numerous starch-like bodies. Whether it be that they use violet powder or some such substance, but somehow or other the starch-like bodies were always there.

THE ELIMINATION OF BISMUTH.

M. HANS MEYER has poisoned mammals and birds by injecting under the skin or into a vein large quantities of the salts of bismuth. At the necropsy the large intestine and its surroundings were seen to be of an intense black color; often there existed also large tracts of necrosis of the mucous membrane of the large intestine, whilst the stomach and small intestine preserved their normal appearances. Chemical analysis of the wall of the intestine and of the contents has demonstrated that the digestive tube all along serves as an excretory surface for bismuth, but that this elimination takes place much more actively at the surface of the large intestine, and that the metal is excreted in the form of a sulphide. By previously making the animals ingest preparations of sulphur, the elimination of bismuth was augmented in the stomach and small intestine, and the wall of the stomach became pigmented of a deep black color. The author concludes from these facts that the presence of sulphuretted hydrogen favors the elimination of the bismuth by precipitating the metal from the capillary circulation of the intestine in the form of the insoluble sulphide, which plays the part of a foreign body. If this precipitation does not take place, the metal re-enters the circulation, and is eliminated largely by the kidneys. As the necrotic tracts and ulcerations are met with almost exclusively in those portions of the digestive tract where the pigmentation obtains its greatest intensity, the conclusion is naturally arrived at that the precipitation of the bismuth in the thickness of the intestinal mucous membrane has caused the necrosis and ulceration by the precipitate blocking the capillaries and vessels of the parts concerned. Further, if the animals are made to ingest simultaneously salts of bismuth and substances that disengage sulphuretted hydrogen, neither necrosis, ulceration, nor pig-

mentation of the intestine occur, evidently because the bismuth and sulphuretted hydrogen in combining mutually neutralize each other. According to Hans Meyer, also, it is probable that in mercurial poisoning the inflammation and necrosis of the gastro-intestinal mucous membrane depend, in a similar manner, on putrid fermentations which disengage sulphuretted hydrogen. It is well known that the prevention of mercurial stomatitis by the use of dentifrices and antiseptic lotions is due to their property of preventing the processes on which the development of sulphuretted hydrogen is dependent.—*London Lancet*, January 2, 1886.

THE USES AND DANGERS OF THE OIL OF SASSAFRAS.

In the *Virginia Med. Monthly* for January, 1886, DR. THOMAS J. MILLER publishes an article on the oil of sassafras, which he recommends highly in the treatment of neuralgia. His method is to saturate a piece of flannel with the oil of sassafras, and rub the affected part briskly until the skin is reddened by the friction, and to take a teaspoonful in several tablespoonfuls of water. It also appears to possess decidedly intoxicating effects.

In this connection a paper read before the Chicago Gynæcological Society by DR. JOHN BARTLETT (*Chicago Med. Journ. and Exam.*, December, 1885) is of interest. He quotes a number of authorities to show that sassafras is not the innocent agent that it is supposed to be, but that in reality it has violent toxic properties. This statement is based largely upon a paper of Dr. Charles L. Hill, which we have already referred to in the August number of the *GAZETTE*, p. 554. Dr. Bartlett further shows that, in addition to its general toxic properties, it seems to have decided power in producing abortion, and he refers to two cases in which this result followed the internal use of sassafras in the form of a tea. According to Dr. Bartlett, sassafras is a narcotic and sudorific; it has the power of inducing tetanic and clonic spasms, followed by paralysis, and produces uterine contractions.

ON A NEW FORM OF CITRINE OINTMENT.

On referring to the new edition of the British Pharmacopœia, just published, it will be seen that the unguentum hydrargyri nitratis dilutum is ordered to be prepared with paraffinum molle, soft paraffin, the synonymes

being petrolatum (its designation in the Pharmacopœia of the United States), petroleine, and unguentum paraffini. It is described as a semi-solid mixture, containing some of the softer or more fluid members of the paraffin series of hydrocarbons, usually obtained by purifying the least volatile portions of petroleum.

These characters do not, however, give us any standard of purity; and, beyond describing the melting-point, we are left in ignorance as to what form of petroleum-jelly we should employ. The material purpose suggested by this innovation in the preparation of this particular ointment is clearly to obviate the destructive effects of decomposition, with its resulting rancidity, which obtained to a very objectionable extent in the old form of the dilute citrine ointment.

This hitherto has been prepared with lard, and sometimes even with an animal oil, such as neat's-foot or trotter oil; sometimes with fish oil, such as cod-liver oil,—the latter serving to keep the ointment better and longer than the former, and being considered by some as more efficacious as a remedial agent. It has also been prepared with fresh butter; this also keeping fairly well.

As soon, however, as the Americans discovered the petroleum-jelly, and it was introduced into Great Britain, it was hoped that it would supersede all these articles in the preparation and dilution of citrine ointment in particular; but utter disappointment was the inevitable result of the trial and the experiment, as rapid oxidation, decomposition, and rancidity set in, just as in the old form prepared with lard, etc.

The cause of this decomposition MR. BLENNERHASSETT ATTHILL (*Brit. Med. Journ.*, Jan. 23, 1886) believes to be dependent upon the manufacture of petroleum-jelly through some acid process and by the addition of possibly some resinous matter or honey with the pretence of giving emolliency and consistency. Mr. Atthill believes the petroleum product which is known under the name of "geoline" to be the best vehicle in the preparation of citrine and oxide of zinc ointment. He states that he has found it to be in every way a perfectly efficacious and stable medium in all ointments, and especially in preserving the citrine form. It blends admirably with nitrate of mercury ointment, and it makes a stable oxide ointment, which keeps for an indefinite length of time. The dilute citrine ointment made with geoline keeps absolutely pure. It is of a firm consistency, pleasant in

its use, having a nice jelly-like appearance, and about 75 per cent. is saved over lard.

The melting-point at which geoline liquefies is stated to be 105° F., so that its consistency in ordinary use is its great advantage over other fluid preparations.

TREATMENT OF SPONDYLITIS WITH THE PLASTER-OF-PARIS JACKET.

PETERSON obtained very satisfactory results with the plaster-of-Paris jacket in spondylitis; as published in the *Archiv für Klinische Chirurgie* (xxxii. p. 182), of twenty-six cases of spondylitis treated with the plaster jacket and Barwell's sling, eighteen were cured, four remained under treatment, two died, one was not cured, and one had an unknown issue. The duration of the treatment was from three months to three years, and the number of jackets needed was on an average six. In most instances the patients felt contented with a comparative slight improvement in their condition.

ALBUMINATE OF CORROSIVE SUBLIMATE AS A SURGICAL DRESSING.

Attention has been directed to this powerful germicide by a most interesting article on the value of an albuminate of corrosive sublimate by Prof. Sir Joseph Lister in the number of the *Lancet* for October 25, 1884. In it the professor, after numerous experiments, recommends a one per cent. solution as the one combining the two advantages of being efficacious and unirritating to the tissues. Writing from London, and having in view the large requirements of a general hospital, he recommends the using of the serum from horse's blood as the menstruum for the corrosive sublimate. The wants of the general practitioner would necessarily be different: namely, what he would require would be some ordinary vehicle that any chemist could procure without difficulty, and of whose purity there could be but little doubt. It occurred to MR. W. L. CLELAND (*Australasian Medical Gazette*, December, 1885) that the simplest and most commonplace article would be the albumen ovi of the pharmacopœia. As a rule an ordinary egg will furnish one ounce of albumen in the form of white of egg; and one ounce of the albuminate would, in ordinary circumstances, be ample to prescribe at one time for any ordinary surgical case. Since that time he has put the idea into practice, and has been so pleased with the result that he has thought it worth while to

draw special attention to Prof. Lister's important discovery. Ordinarily the sample is of a creamy consistence. This, of course, would render it unsuitable for injecting into cavities, and therefore his experience of it is limited to its application to superficial wounds and ulcerations of the surface. The method of using it that he has found most convenient is to paint the surface of the wound or ulcer with the albuminate, place a piece of protective over, and then a pad of some antiseptic wool to catch and absorb any discharge. Dressed in this manner it will be unnecessary to disturb the parts for a period varying from three or four days to a week or ten days. Mr. Cleland publishes notes of three or four illustrative cases:

(1) J. B., æt. 50, contused and lacerated wound, three inches by two inches, of the back of the hand, inflicted by a pick, exposing the extensor tendon of the middle finger, and abrading it. Dressed at first every third day, and then weekly, and subsequently fortnightly. Completely healed without any bad symptoms.

(2) H. W., æt. 45, malignant ulceration of mamma, sinus leading to sacrum and another in connection with the femur. Syphilitic history suspected. Discharge from all the ulcerated surfaces extremely offensive. At first the wounds and cavities were syringed twice daily with carbolic lotion (one in forty), and dressed with carbolic oil and salicylic wool. The odor of the ulcerations was very offensive to the patient himself and to his fellows. The albuminate was tried, in conjunction with the carbolic syringing, at first daily and subsequently every third day. The offensiveness disappeared and the ulcerations even assumed a more quiescent appearance, becoming dried up or mummified to a great extent. The patient subsequently left the asylum.

(3) C. H., æt. 55, chronic ulcers of leg and dorsum of foot, edges indurated, surfaces unhealthy looking. The application of the albuminate speedily removed all unpleasant odor, and the ulcers took on a healing action and progressed to a favorable termination. This case was the more striking as the patient was emaciated to a degree, although she consumed large quantities of food with avidity.

(4) A. S., æt. 50, in the last stage of emaciation; the extremities constantly cold and blue; paralysis of the vaso-motor nerves controlling the capillaries of the face, causing a deep carmine injection of the skin. A slough of the size of half a crown occurred spontaneously on one buttock. The albuminate was applied; the slough did not extend, but sepa-

rated in two days, and the wound was healed within a fortnight. The patient died shortly after. This slough, if not treated, would in all probability have rapidly extended in the usual way and have been a great source of annoyance to every one connected with the case.

The advantages of the dressing are :

- (1) Infrequency of dressing in common with all powerful germicides.
- (2) Simplicity.
- (3) Powerful deodorizing qualities.
- (4) Absence of all irritating properties.
- (5) Small cicatrice that is left.

RECENT PROGRESS IN THE TREATMENT OF CHANCROID.

The multitude of remedies constantly suggested, advised, or urged in the treatment of chancroid is an indication of the degree to which this form of venereal sore can be at times rebellious. The most obstinate form of the chancroid is that designated as phagedenic, and the various modes that may be employed in its treatment have been reviewed at length in the *Journal of Cutaneous and Venereal Diseases* for February, 1886, by DR. CHARLES W. ALLEN.

Recently Spillman, of Nancy, has treated several cases of this variety by first scraping thoroughly with the sharp spoon or curette, excising the undermined edges with scissors, cauterizing with the thermo-cautery, and dressing with diluted liquor of Van Swieten. Among the cases so treated was one of a medical student who had inoculated himself with the pus of a soft chancre on the anterior surface of the thigh. The thigh, lower part of the abdomen, and the scrotum became involved in an extensive phagedenic sore.

Various forms of treatment, from the use of iodoform to prolonged hot baths, were tried, with no effect.

The treatment by scraping, etc., was rapidly followed by a cure in this as in the other cases.

To abort soft chancres, Hebra advises as follows :

Thoroughly cleanse the sore, treat with a preparation of potash-soap and spirits, dry carefully, apply pure salicylic acid, and cover with a plaster.

This treatment succeeds best when the application is renewed on two succeeding days, and the sore suppurates freely. After three days, a white scab covers the sore.

An emollient ointment is now to be spread on lint, and applied. Under this the scab

speedily separates, and the wound heals without any bubo formation.

Iodoform is one of the most valuable applications in the slowly destructive forms of chancroid. Its use, however, in private practice is almost impossible, unless in some way the odor be destroyed or disguised.

Men object to it from reason of its *give-away* perfume, and public women will not submit to its application, as it keeps the men away from the house.

Only in the *virtuous*, therefore, can it be used pure without opposition. Iodoform has now so wide a range of application outside of venereal diseases that it is to be hoped these prejudices will soon disappear. This may, perhaps, be accomplished by deodorizing the iodoform, various formulæ for which have been already published in the GAZETTE.

Dr. Allen has recently called attention to the beneficial action of pyrogallic acid in the treatment of chancroids. This was first recommended by Vidal, of Paris, whose good results led others, among whom were Terillon and Mauriac, to make extended trial of the drug. Vidal recommended a powder composed of one part of the acid and four of starch. Dr. Allen has used and recommended the application of the pure powder to be first applied and covered over with a layer of traumaticine, or a solution of pyrogallic acid in collodion.

Of all caustics, the hot iron or thermo-cautery is probably the best for the majority of cases. With it we produce just the amount of cauterization we desire.

It can be used where other caustics would be dangerous, as in the vagina.

The pain produced, though severe, is of much shorter duration than that from chloride of zinc or nitrate of silver.

Since the introduction of cocaine into venereal surgery, the Paquelin cautery has lost its terror for the patient. Bono (*Gaz. delle Cliniche*, ii., 1885) says, "In cauterization, cocaine showed every desirable analgesic property of a sufficiently long duration."

Latouche (*Rev. de Clinique Méd.-Chirurg.*, January, 1885) strongly favors the thermo-cautery at a dull red heat, especially for chancroids of the vagina and neck of the uterus. He gives a number of cases in which the cure was complete in from eight to thirty-three days.

Dr. Aubert, of Lyons, has recommended prolonged hot baths as a means of treating chancroid.

Martineau and Lormand have carried out

some experiments at the Lourcine Hospital in Paris, on the effect of baths at about 104° F. on chancroids and buboes.

They found that in all the cases the virulence quickly disappeared, and that auto-inoculation gave negative results after one or more baths in all cases excepting one, where the chancroid was within the urethra.

They approve of the treatment for severe cases, finding it quite practical, and that it hastens the cure in all cases.

Wet compresses should be put upon the patient's head while in the bath, and an attendant be present for fear of syncope. It is not necessary to submerge the whole body.

Sponge-Grafting.—Dr. Pokrovsky applies fine slices of the best Turkish sponge, washed in a three per cent. solution of carbolic acid, to chancroids and chancroidal buboes, and finds that this treatment brings about rapid cleansing and healing in about ten days. In syphilitic cases, the sponge-dressing gives rise to rapid healing only after the virus has been mitigated by specific treatment; otherwise the application of sponge-grafting causes disintegration of the tissue.

THE CURE OF SPASMODIC ASTHMA WITH ELECTRICITY.

DR. E. PAGET THURSTAN reports in the *Brit. Med. Journ.*, January 16, 1886, the case of a man, aged 42, with a gouty history, who had been for a long time suffering from spasmodic asthma, for which he had consulted a number of physicians and had taken a large variety of patent medicines without relief. The attacks of dyspnoea commenced about 3 or 4 A.M., lasting till about 8 or 9 in the evening, and were very severe. There was a distinct cardiac impulse in the epigastrium; the area of cardiac dulness was increased, and extended lower and to the right of its normal position. The aortic sounds were not very loud, and were heard only to the right of the mid-sternal line. There was no murmur or reduplication of sounds. The pulsation of the carotids was very distinct. Ronchi were audible over the subclavian region on the right side, and very occasionally on the left, but resonance was normal. There was some enlargement of the liver and spleen. The bowels acted regularly, but he had a feeling of fullness and drowsiness after meals, and flatulence; latterly these had been better, as he had been omitting cabbage and green vegetables, cheese, pastry, etc., from his dietary, having discovered, by experience, that a supper including

these was a certain prelude to a severe attack of dyspnoea. He had always been moderate in the matter of drinking.

On March 24, 1884, after using an interrupted current with a bichromate of potassium cell daily for a fortnight along the edge of the sterno-mastoids, from the level of the jaw to the sternum, he was free from dyspnoea; but the pulsation of the carotids in the neck continued, and rhonchi were still to be sometimes heard under the right clavicle. He had not been free from attacks for so long a while since November, 1883; he could now run uphill without distress.

EFFECT OF NITRITE OF AMYL ON THE BLOOD-PRESSURE.

The influence which inhalations of nitrite of amyl exert on the arterial pressure is usually thought to be a lowering of the same. The investigations and direct measurements of DR. SCHWEINBURG (*Centralbl. für Med. Wiss.*, January 2, 1886) with Basch's sphygmograph, however, brought out different results.

The blood-pressure was seen to rise after inhalation of the drug, at the time when the well-known symptoms, reddening of the face, sensation of warmth, pulsation of the carotid arteries, etc., set in. This apparent contradiction between the ordinary assumption and Schweinburg's researches this observer explains by the statement that nitrite of amyl given in large quantities, or in small but repeated doses, produces a reduction of the pressure, but after small quantities, such as are exhibited for therapeutic purposes, a transitory rise takes place. Hence care must be taken in cases in which a sudden rise of pressure would be dangerous.

LARGE CERVICAL SPINA BIFIDA UNDERGOING SPONTANEOUS CURE.

At the meeting of the Clinical Society of London, held January 8, 1886, MR. CLUTTON read a note of a case of the above nature (*Medical Press*, January 13, 1886).

The patient was the younger brother of a case in which he had successfully treated a lumbar spina bifida by the glycono-iodine injection, and the particulars of which were reported to the Society in 1862. Both cases were shown as living specimens last November. The mother had had ten children, of which the ninth and tenth were affected as above mentioned. The latter was born in

1885 with a spina bifida in the cervical region of the spine, of which the size and position were demonstrated by means of a photograph. It was six and one-half inches in diameter, and rather coneiform in shape, with the apex directed upwards. The coverings were thin but completely covered with skin. It could be reduced in size by pressure, and filled again when the child cried. A considerable aperture could be felt in the vertebral arches. It was thought to be a simple running goitre from the fact that there was a perfect cutaneous covering without any ulceration, median furrow, or central depression, that it was translucent in every part of its surface, and that there were no paralytic symptoms. When five weeks old the cyst was found to be much smaller, and its coverings quite soft and flaccid. No treatment of any kind had been adopted, and yet the communication with the interior of the vertebral canal had become occluded. From that time till December it diminished in size, when the child died from causes unconnected with the spina bifida. Mr. Shattock showed the specimen which was obtained from the post-mortem examination.

MR. GOLDING BIRD said he should like to ask of what the child died, as it seemed to him the photography was as fatal as the operation.

MR. R. D. PARKER thought this was not a straightforward case of spina bifida. In the report of the committee last year appointed to investigate spina bifida there were cases of a precisely similar kind. Mr. Thomas Smith and Mr. Holmes had drawn similar conclusions to himself. He thought the attempt of spontaneous cure was not so successful as when injection had been adopted. Many recoveries had followed treatment, and he thought, therefore, that treatment was more favorable than spontaneous recovery.

A MEMBER asked what changes did the tumor undergo? It was said that at a certain period the tumor began to shrink. Were the changes due to healthy processes, or to inflammatory changes? He had assisted Mr. Holmes at an operation in a case similar to the one under discussion. The tumor was situated very high in the dorsal region. The child was a few weeks old. A ligature was placed round the tumor, which was removed. The state of the patient became very critical, and the child died in a few hours.

MR. CLUTTON, in reply, said the child died from causes unconnected with the cyst,—from diphtheria or some intercurrent affection. Mr. Parker had said it was not a pure case of spina

bifida, it might be a meningocele or myelocele, but these cases of spina bifida vary, some as meningocele sometimes contain the cord, and sometimes an expansion of the cord. Had the case survived he believed the tumor would have become quite small, and undergone spontaneous cure. It might have been laid open without endangering the life of the child. No difficulty presented itself in the diagnosis. There was tremendous impulse on coughing, the thing had become considerably smaller, and finally it gave no impulse when the child cried.

ADMINISTRATION OF QUININE IN CASES OF IRRITABLE STOMACH.

That quinine requires to be administered in cases which are accompanied with irritability of stomach and bowel is shown by Dr. Aitken's attempts (Report, British Medical Association, at Cardiff, 1885) to render the subcutaneous injection of the drug innocuous. Doubtless, too, in zymotics, especially typhoid, where putrefactive (germs) fermentation goes on to a great extent in the stomach, frequently repeated doses of the drug would retard or destroy the processes, while not interfering with digestion. MR. JOHN REID (*Australasian Medical Gazette*, December 15, 1885) proposes, therefore, for cases of irritable stomach, to dissolve quinine in citric acid (glycerin may be added), and made into an ordinary mixture. Dispense bicarbonate of sodium in powders, more than sufficient to neutralize the citric acid of a dose. Add the soda to milk in a glass, stir well, then add dose of quinine mixture, still stirring. The effervescing draught, somewhat resembling sparkling koumiss, will be tolerated by the stomach, even when the tongue is red and irritable; the tongue, after the draught, changing its character.

Reviews.

AN ATLAS OF CLINICAL MICROSCOPY. By Alexander Peyer, M.D. Translated and edited by Alfred C. Girard, M.D. Ninety Plates, with one hundred and five Illustrations, Chromo-Lithographs. New York: D. Appleton & Co., 1885.

"While engaged in the practice of medicine I had recognized the necessity for a physician to become familiar with the microscope if he made any pretension to scientific treatment."

This, the second sentence of the author's preface, echoes the experience of not a few.

From being an exceptional accomplishment, familiarity with the microscope and its clinical applications has become a necessity,—an additional refinement of sense for every progressive practitioner. What a man actively engaged in the routine of practice *may* do the atlas before us bears witness; for its author tells us the plates are selections from a large collection, which grew within a few years as the fruit of the “pleasant habit” of carefully sketching everything met with in his clinical examinations.

The subjects illustrated are divided into nine chapters,—Blood, Mammary Secretion, Urine, Sputum, Intestinal Contents, Contents of Stomach, Contents of Abdominal Tumors, Secretion of the Female Sexual Organs, and Micro-Organisms producing Disease.

The ninety plates are accompanied by concise descriptions of varying merit, the text being at times of but slight moment, at others pregnant with facts.

The first three plates—twelve figures—are devoted to the blood, a few figures illustrating its normal conditions, while the remainder represent a number of pathological changes. The forms and coloring of the hæmin crystals by no means accurately represent these important subjects.

The subject of the following plate, with four figures, is the mammary secretion, in health and in inflammatory conditions.

Chapter III.—Examination of the Urine—is by far the most elaborate of the book, claiming over two-thirds of the entire number of plates.

The section is introduced with a concise review of the general qualities of the urine, followed by a number of the more important tests for albumen and sugar. Of the thirty-six plates illustrating urinary examinations proper, nineteen are acceptable representations of crystals of greater or less importance. Seldom, however, is it that uric acid appears as resplendent in gorgeous colors as do the crystals of some before us.

Plates 27–44 figure the forms of tube-casts, and are second to none in importance. If we pass the last of these with a sense of disappointment, it is, possibly, but a reassertion of the conviction that drawings never convey the exact appearance of the more delicate forms of casts as seen under the instrument. The too-pronounced and often harsh outlines, and the loss of the peculiar transparency of the hyaline varieties, do not mark these drawings as favorable exceptions.

The remaining twenty-six plates of the

chapter on the urine illustrate hemorrhagic, catarrhal, and inflammatory conditions of the kidney and urinary tract, including a rather prolix account of “Spermatorrhœa” through eleven plates. Among these latter the one representing the hyaline cylinders sometimes found in spermatorrhœa is the most interesting, as indicating a possible source of error in the diagnosis of grave kidney-trouble from the presence of apparently hyaline tube-casts.

After so generous an allotment of plates to comparatively unimportant conditions of the urine, the discussion of the important section relating to sputum, in fourteen plates, at least four of which have little value, seems meagre.

Plate 74, representing the Charcot-Neuman—so-called asthma—crystals will be examined with interest. A series of drawings of the sputum in the various stages of pneumonia would have made an acceptable addition; likewise further illustrations of phthisical expectorations would have been of interest.

Of the four plates relating to the stool, our author contents himself with a single drawing of objects found in normal fæces, in addition to the presence of parasites.

Of the many interesting conditions regarding which valuable information may be obtained by microscopical examination, he has nothing.

Plate 85, after Koch, represents the “comma” bacillus of cholera. A useful supplementary drawing would have been one showing *other curved* bacilli under identical amplification, demonstrating the *differences* between these common forms and the supposed pathogenic organism described by Koch.

Four plates follow, with contents of the stomach, including vomit in chronic catarrh, contents of an ovarian cyst, and leucorrhœa of pregnancy as subjects.

The final plate represents the micro-organisms supposed to be genetic of pyæmia, typhoid fever, pneumonia, and gonorrhœa, it being a fair reproduction of part of the well-known figures by Friedländer.

Considered collectively, the drawings are generally well executed: an occasional inferior plate is offset by the few of especial merit.

The wisdom of devoting so large a portion of the illustrations to the urine, at an apparent expense to the fulness of other equally important subjects, may be questioned. A judicious economy of space by the union of the salient features of several plates in not a few instances, would offer an opportunity to make

additions which would enhance the practical value of the book as a clinical guide.

In conclusion, we cannot forbear expressing our protest against the omission of the amplification of the figures. The term "weak" power is too vague to convey any definite ideas to those little acquainted with microscopical examinations,—the very class for whom these plates have the most value,—while "with Hartnack 7 or 9" to many American readers will be scarcely less unsatisfactory. As a specimen of book-making the volume is very attractive, the imprint of its well-known publishers being sufficient guarantee for the excellence of the mechanical execution.

TRANSACTIONS OF THE ACADEMY OF MEDICINE IN IRELAND. Vol. III. Edited by William Thomson, M.A., F.R.C.S.

Dublin: Fannin & Company, Grafton Street;
London: Ballière, Tindall, Cox; Edinburgh:
MacLachlan & Stewart. 1885.

The Academy of Medicine of Ireland is an institution with which we confess we were unacquainted until the volume now before us came into our hands. It appears that this society was organized in the year 1882, and the present Transactions, having the date of 1885, is the third of its series. If the first two volumes are as valuable as the present, this new medical society must be considered to have taken a foremost rank among the similar societies of the world. It seems to us extraordinary that in this great country of America, with its alleged sixty thousand doctors, we cannot have one medical society whose transactions shall favorably compare with that put forth by this lusty medical infant of the evergreen island.

The book before us itself contains about five hundred pages, which are chiefly filled by short articles covering almost the whole field of practical medicine, and in many places entering upon the domain of hygiene, anatomy, physiology, and other sciences allied to practical medicine. The first paper is an elaborate article by Mr. Walter G. Smith, upon Lupus and its treatment. Then there comes a report of a case of Anuria, by Mr. Walter Bernard; then an article upon Hereditary Amaurosis, by Mr. John B. Story; next an article upon Cholera in India, by Surgeon-Major Hamilton, in which the preventive medicine, so called, of the disease is especially considered. Mr. Hamilton is not much of an enthusiast, either as regards the prevention and treatment of cholera, confessing that "at present the outlook as regards the pre-

vention and treatment of cholera is dark indeed."

Space is lacking in which to even mention, let alone to discuss in detail, the very many papers, the scores of articles which are here collected together. We can only note a few points. In an interesting article Dr. J. M. Finny discusses Hyperpyrexia in rheumatic fevers, and the cases of so-called Cerebral Rheumatism, but fails, as it seems to us, to comprehend the disease through lack of clear recognition of the fact that there are two or three essentially different forms of this Cerebral Rheumatism, and through failure to apprehend the modern theory in regard to the nervous origin of fever. It is plain that he knows the work of Dr. H. C. Wood simply by references to it which have been made from time to time in European medical journals. The theory is not, as Dr. Finny seems to think, "that the liberation of heat on the surface of the body is controlled or restrained in fever through disorders of the nerves, so that by retention the temperature rises;" but the theory is that fever is due to a disturbance of the relation between the nerve-centres which control the production and the dissipation of animal heat, and that there is also such a paralytic condition of the inhibitory heat-centres that chemical movements in the stored tissues of the body occur more rapidly than in health.

An interesting paper is that by Dr. Cruise, on Contrexeville and Royal-les-Bains; a paper which may be read with great advantage by almost every American physician who has patients suffering from gouty disease desirous of visiting European springs. Mr. Charles B. Ball has an exceedingly interesting article on the very frequent development of papillomata on the hands of workers in carbolic acid factories and their conversion into malignant infiltrating epithelioma; a paper which finds its corroboration and support in an article by Mr. John B. Stewart, describing the production of epithelioma of the eyelids by irritation from crude carbolic acid. We shall conclude our review of this very interesting book by remarking upon a paper by P. S. Abraham in regard to the habit of eating themselves up sometimes developed in carnivorous animals during confinement. A fine lioness in the Zoological Gardens in Phoenix Park, Dublin, was discovered to have devoured some six inches of her tail, hair, skin, bones, all complete. A week or two later, one night she again took to eating her unfortunate caudal appendage, and so continued until the

butt was so short and uncomeatable that the beast was forced to let it alone. A month or two later she began at one of her forepaws, and continued to gnaw it until there was but little left of it; finally, the agony from the mutilated foot and tail became so great that the beast was shot. During the whole period the animal seemed to be in perfect health, her excretions were normal, her fur, flesh, and appetite in excellent condition. Changes of food and various other expedients were tried in order to save the lioness, which was valuable and had had three sets of cubs. This incident led Mr. Abraham to correspond with the authorities of almost every zoological garden of importance of Europe; he found that although the occurrence is rare, self-eating does happen every now and then with almost all of the carnivora. A very curious fact is that monkeys quite frequently feast upon their own tails. Parrots also have been noticed to devour their feathers and flesh. Mr. Abraham is inclined to believe, along with some of the superintendents of the gardens, that these animals are insane, and that the perversion of taste may be looked upon as one of the manifestations in the lower animals of that protean affection which we call hysteria. On the whole, we think it would not be a bad thing if some of the hysterical females belonging to the species *Homo* (variety *Americana*) would imitate the lower animals in this disappearing down their own throats.

TRANSACTIONS OF THE TEXAS STATE MEDICAL ASSOCIATION; Seventeenth Annual Session, Houston, Texas.

Austin, Texas: Printed for the Texas State Medical Association, 1885.

This is a well-printed book, containing the usual rhetorical addresses seen in works of its class, and chiefly valuable on account of a number of cases which are reported in it. The most remarkable article seems to us to be that of Dr. M. Ramsdell, of Lampasas, Texas, in which are reported ten cases of serious acute attacks asserted to be due to biting from spiders. The symptoms seem to be nausea and vomiting, increase of temperature, sharp, shooting pains, or burning pains, in the back, head, and limbs, with profuse sweating, and more or less general depression. None of the cases died, but one woman, who was furiously delirious for twenty-four hours after the bite, was seriously affected for two weeks. In a book like the present, with its limited circulation outside the district it

represents, reported cases were in the past practically buried so far as concerns the general medical profession of the world, but now, thanks to the *Index Medicus*, facts worthy of remembrance are marshalled into their line even though they belong to the cohorts of a remote region.

ORGANIC MATERIA MEDICA AND THERAPEUTICS. By James Young Simpson, M.D.
New York: J. H. Vail & Co.

This is a book of 328 small pages occupied with handsomely displayed type, arranged in greater part in short sentences. It is a brochure which is offered as a high road to the regions of the student's Paradise, to the gardens of professional preferment which lie beyond the dark gates of examination. As a work for cramming it may have some value, but that the committing of its whole contents would in any degree prepare a man for the practice of medicine admits of grave doubts. Possibly, however, he would be a little better off than if he had never studied the subject at all, but he certainly would not even reach that first mental condition which is the vestibule to the temple of knowledge, namely, conviction of the extent and depth and breadth of his own ignorance.

THE POPULAR SCIENCE MONTHLY.

This is a very valuable magazine, both interesting and instructing. We are informed that General John Newton, Chief of Engineers, United States Army, originator of the plan and director of the work, has prepared a complete account of the operations for the removal of the obstructions at Hell Gate, from their beginning to the explosion of Flood Rock, in October last, which will appear with full and new illustrations as the leading article in the February number.

THE December number of Wood's Library of Standard Medical Authors is a reprint in one volume of two books by Dr. W. R. Gowers, of London, of *Diseases of the Brain* and of *Diseases of the Spinal Cord*. The original editions of these works have been so thoroughly reviewed, and are so well known to the reading medical public, that of course no further notice of them would be at present in order.

REVUE SCIENTIFIQUE.

The following is a summary of the table of contents of the *Revue Scientifique* for the past month:

December 26, 1885 :

Public Works.—The Port of Marseilles. By M. de Flaix.

Psychology.—Consecutive Images and Visual Memory. By M. A. Binet.

Miscellany.—The Colonial Future of France. By M. Janssen.

Chemistry.—Chlorinated Ethyl Benzines. By M. Israti.

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

January 2, 1886 :

Progress of the Sciences.—Contemporary Science. By Huxley.

Psychology.—Intelligence of Animals. By M. J. Delbœuf.

Physiology.—Lessons on Animal Heat. Fishes and Temperature. By M. Richet.

Astronomy.—The New Star. By M. Barré.

Zoology.—The Organs of Flight in the Animal Series.

Book Notices.—Diseases of the Nervous System. By M. Grasset.

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

January 9, 1886 :

The Scientific Congress.—Criminal Anthropology in 1885. By M. E. Ferri.

Miscellany.—Russian Surgeon at Sebastopol. By Pirogoff.

Physiology.—Lessons on Animal Heat. By M. Richet.

Zoology.—Development of the Genital Organs in Gasteropods. By M. Rouzaud.

Book Notices.—Diseases of the Ear. By M. Gellé.

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

January 16, 1886 :

Biology.—The History of General Anatomy. By M. Duval.

Physiology.—Lessons on Animal Heat. By M. Richet.

Psychology.—Religious Exaltation in the Orient. By M. Zambaco.

Miscellany.—Balzac and Chemistry. By M. Grimeaux.

Book Notices.—Hygiene in Dwelling-Houses (F. and E. Putzeis) ; Legal Medicine, Medical Jurisprudence, and Toxicology (M. Legrande du Saulle).

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

January 23, 1886 :

Geography.—The New Congo State. By M. Plauchut.

Biology.—The History of General Anatomy. By M. Duval.

Geology.—The Earthquakes in Algeria in December, 1885.

Zoology.—The Fossil Fish in Roumania. By M. Cosmovici.

Book Notices.—Medical Zoology (M. R. Blanchard) ; Magnetism and Hypnotism.

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

Correspondence.

PALATABLE PRESCRIBING.

To the Editors of the THERAPEUTIC GAZETTE :

GENTLEMEN :—The article by Dr. Martin, of Chicago, on *Palatable Therapeutics* suggests to my mind more difficulty than it removes. If we are to contest with the homœopath, who can readily render a prescription which, medicinally, contains nothing, both pleasing to the palate and gratifying to the man who holds the purse-string, we might as well give up the race at once.

Let all honor be given to the French pharmacists and physicians who have long taken the lead, by innumerable ingenious devices, through which medicines are presented in agreeable form, while we freely avail ourselves of the latest advances of pharmaceutical chemistry of our own day and our own land.

But the homœopath has entered a domain wherein it is hopeless that we should think to contest. Our first duty is to deal with candor and to speak the truth to our patients ; our first and constant purpose is to save, to cure, to relieve. When we have decided what is the surest and readiest means to this end, we may make our presence and interposition as pleasant as possible.

It is far from certain that we always have the full energy and efficacy of the drug given us in its principal alkaloid or glucoside. If the patient's stomach positively refuses to take our few drops of tr. digitalis, we will do our next best for him with digitaline ; but not because his palate is offended.

I yield to no one in my admiration of the elastic capsules of the balsams. But the patient must have learned to swallow a pill before he can take medicine in this form, for

the capsule cannot at option be chewed or swallowed or spit out, with equal present impression and subsequent result, as if it were a homœopathic pill. Still again, too often the weak stomach shows offence if ten minims of a sharp balsamic oil be suddenly discharged into its cavity, and the patient, whose homœopathic neighbor we are striving to please, will quite likely complain if he is directed to take a wineglass of milk or broth with every capsule. It were no more trouble to swallow a turpentine emulsion at first hand.

Once more, I contend that it is not often feasible to administer the alkaline bromides in capsule-form, considering the usual change. Moreover, what are we to do towards gratification of appetite when it comes to the occasional massive dose of potass. iodide which Séguin and Jonathan Hutchinson, *e.g.*, urge nowadays? Many of us think we find frequent occasion to order strychnine and phosphorus in much larger doses than the gr. $\frac{1}{60}$, $\frac{1}{100}$, $\frac{1}{150}$, which the obliging New York pill-makers turn out by the myriad annually for the profession. The gr. $\frac{1}{15}$ to $\frac{1}{4}$ of one or the other hardly makes a pleasant impression upon the patient that has been nurtured on homœopathic sweetmeats.

It will not come amiss to recall, in this connection, the counsel which Sydenham gives in his first preface: In the capacity of *Homœopath* (*δουσιονα θής*), says this great writer, ought every physician to enter the chamber of his patients,—writing, as he did, a good hundred years before Hahnemann stole and prostituted the word,—that is, *as a fellow-sufferer and in full sympathy*.

Surely, when the situation is reversed, as it is likely with all of us to be some time, and we call in the doctor, we shall wish our physician to give first and chief attention to something else than rendering himself and his remedies flattering and sweet.

Yours faithfully,

HENRY M. FIELD.

THE AXIS-TRACTION FORCEPS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the THERAPEUTIC GAZETTE of December 15, 1885, I notice an editorial on the above subject, which is almost an exact copy of one that appeared in the *Journal of the American Medical Association*, September 26, 1885, to which I have duly replied in the same journal of October 17 and October 31. Should any of your readers take the least interest in this matter, I trust it

may save you the trouble of further copying by referring them at once to the above journals. In every article I have written on this subject, in every verbal explanation of this instrument I have uttered, I have invariably and without any exception credited the button-hole joint to Dr. Felsenreich. To two disingenuous criticisms I have categorically answered, and in the most courteous terms corrected misrepresentations, and stated that I took the button-hole joint from Dr. Felsenreich.

The accusation contrary to this fact is again reiterated, and I pronounce it *palpably but unqualifiedly and wilfully false!*

Respectfully, DR. L. E. NEALE.

BALTIMORE, January 3, 1886.

[In order that no injustice may be done, we print this letter of Dr. Neale's. The editorial alluded to by Dr. Neale and that which appeared in this journal were written by the same hand, hence the resemblance between them. Our own editorial was written before the replies of the doctor in the *Association Journal* were read. We cannot occupy the columns of this journal with any further controversy concerning the matter. On the 18th of December an article was read by Dr. W. W. Jaggard before the Chicago Gynæcological Society, in which the whole subject has been traversed. This article has at present writing not yet appeared, but we are informed that it will be published in a few days; to it readers desirous of following out the matter are referred.—EDS.]

GONORRHOEA IN WOMEN.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—The article in the December number of the GAZETTE, entitled "On the Importance and Diagnosis of Gonorrhœa in Women," so nearly describes a condition found in a young woman who called at my office a few months ago to be treated for gonorrhœa, that I will give a short history of the case. The patient said she was treated for the disease a short time previous by a physician of Indianapolis, Indiana, and was dismissed with the assurance that she was cured. Acting on this assurance from the doctor, to her dismay she brought misfortune to one of the other sex.

A thorough examination of the whole surface of both the vagina and the vulva revealed no trace of the disease. On turning my attention to the cervix, there I found pus,

to every appearance gonorrhœal, with a diseased surface extending to the depth of about half an inch. After pursuing a course of treatment which consisted, principally, in the application of nitrate of silver in stick form, the patient was dismissed with every appearance of being cured.

Respectfully yours,
H. L. PRATT, M.D.

ELGIN, ILLINOIS, January 2, 1886.

CHLOROFORM TREATMENT OF TAPEWORM.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—The question as to whom belongs the credit of first employing chloroform for the expulsion of tapeworm seems to interest quite a number of your readers. I would therefore state that before the class of the Ohio Medical School of 1864-65, Prof. Blackman, when lecturing on the anæsthetic properties of chloroform, mentioned in a humorous way that it had been employed in drachm doses, followed by castor oil, for expelling tapeworms. Many of the class made a note of it, and if they will refer to their old memorandum-books, will no doubt bear me out in my statement. So we must go back prior to 1864 to find the originator of this method of treatment.

Respectfully yours, etc.,
C. GERSTMAYER.

TERRE HAUTE, IND., January 22, 1886.

Notes and Queries.

MUSSEL-POISONING.

An unfortunate instance of poisoning by mussels (*Mytilus edulis*) recently took place at Wilhelmshaven (*Medical Press*, November 25, 1885). Two vessels were taken into dry-dock on October 17 for the purpose of cleaning, the sides of which were covered with the common mussel. The dock work-people collected large quantities and took them home, where they were prepared and eaten. Very shortly after partaking of them symptoms of poisoning set in, nineteen people being attacked,—thirteen men, five women, and one child. Nine of the cases were serious. Within one and three-quarter hours after eating the mussels the first death took place, and three others followed within four and a half hours. The Kreisphysikus, Dr. Schmidtman, made a post-mortem examination in the last case. The condition met with corresponded to irritant

poisoning,—redness and swelling, and in many places complete detachment of the mucous membrane of the intestine. The remains of mussels were among the intestinal contents, but no older masses. The spleen was swollen and thickened. Dr. Schmidtman attributed the poisoning to a ptomaine, but Virchow could not agree with this. He is, however, inclined to the view that it was due to an alkaloid. Portions of the bodies and various quantities of the mussels were submitted to Professors Virchow and Koch for examination, and these gentlemen, supported by Professors Eilhard, Schulze, Salkowski, and Wolff, instituted experimental investigations with them, the result of which they have reported. Both the flesh and decoction contain the poison, which is weakened neither by heat nor by alcohol. Small animals were killed by it in a quarter of an hour. The poison is said to act like curare, by paralyzing the motor nerves. Virchow places the poison in the series of fish-poisons that develop in both dead and living fishes. He also reported that Koch had discovered several characteristic bacilli, but that he had not succeeded in propagating them, so that no definite judgment could be pronounced upon them.

Professor Salkowski reported that all the active extracts of the poison were at once rendered inactive by moistening with a drop of sodium bicarbonate. From this he concludes that the poison is a fugitive alkaloid that had as yet not been isolated. The ships were not copper-bottomed, so that there could be no question of the mussels being rendered poisonous by metallic absorption.

The Paris correspondent of the *British Medical Journal* (December 12, 1885) refers to a somewhat similar case reported by DR. LABORDÉRIE. The patient was an itinerant dealer in vegetables; he was seized one night with violent pain in the mouth and pharynx, and respiration became difficult. The patient sat up or walked about all the night. The buccal mucous membrane and the tonsils were excessively red, and the tongue was white. Diarrhœa and vomiting set in during the night; the neck became stiff and tender; the heart and lungs were perfectly normal, and all symptoms of gastric disturbance were absent. The patient, two years ago, had an attack of multi-articular rheumatism. The evening before he was taken ill he had eaten plentifully of mussels. M. Labordérie remembered the connection between urticaria and rheumatism, noted by M. Potain in a clinical lecture, but admitted the possibility

that his patient was suffering from urticaria, provoked by eating mussels. He prescribed an emetic and a draught containing 60 grains of salicylate of sodium. The pains in the mouth and pharynx disappeared, breathing became normal, and an eruption of urticaria covered the patient. M. Potain, in one of his clinical lessons, said that he had twice experienced the same symptoms after eating mussels, and had twice suffered from urticaria as the result of drinking seltzer-water on a very hot day.

QUILLAIC ACID.

What is ordinarily known in commerce under the name of saponine is not a distinct substance, but a mixture of various organic and inorganic matters. The toxic properties of the saponine of commerce are, according to KOBERT (*Gazette Méd. de Paris*, No. 42, 1885), due to the presence of two principles for which he proposes the names of quillaic acid and sapotoxine. To obtain the first of these a decoction of quillaja bark is precipitated by neutral acetate of lead; the precipitate, after being well washed, is freed from lead, reduced by boiling, and the residue dissolved in absolute alcohol; after filtering and evaporation, the residue is again dissolved in a mixture of five parts of chloroform to one part of alcohol. By these means a great part of the coloring matter is avoided. On the addition of ether to this filtrate, quillaic acid is deposited in snowy flakes, which are dried over sulphuric acid. The poisonous property of this acid and its saline combinations is enormous. It is only necessary to inject $\frac{1}{1000}$ of a grain for each pound of body weight into the veins of a dog or a cat to produce death, while 30 grains administered by the mouth are safely borne. By heating this acid in contact with a solution of baryta the poisonous properties are entirely lost. Kobert is therefore led to believe that saponine is an inert product of the transformation of quillaic acid.

TEREBENE.

Some uncertainty appears to prevail respecting a material recently introduced, under the name of terebene, to the notice of medical men, for inhalation in cases of winter cough and other purposes, which we are informed has been a cause of inconvenience in several instances. DR. MURRELL'S paper on the use of terebene appeared in the *British Medical Journal* of the 12th of December last, and was abstracted in our last issue, and

in it he referred to the pure form of the substance that has been well known to chemists for many years. He spoke of having used terebene during the last five years with excellent results in numerous cases of winter cough. That substance he correctly described as a product of the action of sulphuric acid upon turpentine oil, a clear colorless oily liquid, having an agreeable odor like that of fresh-sawn pine wood, which though not miscible with water could be given upon sugar, as the dose is small. This description of a substance well known to chemists would have been sufficient, but unfortunately Dr. Murrell added that the substance he referred to was not the same as "the patent medicine sold under the name of 'Terebene.'" The following week a letter appeared in the same journal from DR. BOND, of Gloucester, in which he spoke of himself as being the person who originally brought terebene under the notice of the profession, and further led to the inference that the manufacture of terebene was the subject of a patent. Hence has arisen the inconvenience above referred to, and as several communications have appeared on the subject, we think it desirable to draw attention to the recorded information respecting terebene and its products, as well as to the patents of Dr. Bond for certain applications of this material (*Pharm. Journ. and Trans.*, January 16, 1886).

The hydrocarbon having a composition represented by the formula $C_{10}H_{16}$, which is the chief constituent of turpentine oil and termed terebenthene, as obtained from French turpentine (*Pinus maritima*), has a specific gravity of 0.864; its boiling-point is $161^{\circ}C.$, and it has a specific rotatory power $= -42.3^{\circ}$. English turpentine oil (*Pinus australis* and *P. tæda*) contains a corresponding hydrocarbon termed australene, having the same specific gravity and boiling-point as terebenthene, but it differs from that in being dextrorotatory, the specific rotatory power being $= +21.5^{\circ}$. Under the influence of heat both hydrocarbons undergo alteration, the rotatory power being reduced and the boiling-point raised; the change that takes place being a modification of the molecular structure, giving rise to isomeric and polymeric products. One of these products of molecular transformation of turpentine oil is the substance termed terebene, which Dr. Murrell has recommended for medicinal use.

According to the description given of that isomeric or polymeric modification of the chief constituent of turpentine oil, which has been

named terebene, it is an oily liquid having the odor of thyme oil, a specific gravity of 0.864 and a boiling-point of 156° C. Its chief peculiarity consists in its being optically inactive, while the hydrocarbons terebenthene and australene from which it is produced have a rotatory power. It is obtainable by the action of various reagents upon terebenthene, the one most effective for this purpose being boron fluoride, which, it is stated, instantly converts one hundred and sixty parts of terebenthene with great rise of temperature; but by this reagent other products besides terebene are produced, all of them agreeing in being optically inactive, but some having a boiling-point above 300° C. Concentrated sulphuric acid acts in a similar manner, but less energetically. To prepare terebene in this way rectified turpentine oil is to be mixed with one-twentieth part of oil of vitriol and the mixture left to stand for twenty-four hours. The clear liquid is then decanted off from the sediment and distilled, this operation being repeated several times until the product no longer acts upon polarized light. It is then washed with water and carbonate of sodium solution, dried over calcium chloride, and distilled. The same molecular alteration is produced by several acids, such as boric acid, and even acetic, citric, and tartaric acids, with the aid of heat, but the action is very slow. Zinc chloride acts in a similar manner at 100° C.

A polymerized oil called colophene, having a boiling-point of from 310° to 315° C., a specific gravity of .94, and an aromatic odor, is also produced, together with terebene in the process above described, as well as other polyterebenes of higher density and boiling-point, and all differing from turpentine oil in being optically inactive.

In the specification of Dr. Bond's patent for the preparation of disinfectants (1874, No. 1510, England) the application of terebene for this purpose is claimed as part of the invention, but the substance itself is spoken of as an isomeric derivative of turpentine oil that was then well known to chemists, and had been described in many chemical works. In the specification of a subsequent patent (1874, No. 3799) the application of both terebene and colophene for the same purposes is also claimed, and it is stated that the material distinguished in the specification by the name of "terebene" was to be understood as a mixture of the substances known to chemists as terebene and colophene. It is clear, therefore, that so far as these patents have anything to do with

terebene it is in regard to a matter quite apart from its application as a medicinal agent, and that there is nothing in the specifications of these patents to justify the application of the term "patent medicine" to terebene. A crude form of polymerized turpentine oil has been sold under the name of terebene, but it was not of such a nature as to be suitable for medicinal purposes, though it has been used to some extent as a disinfectant and deodorizer.

From what has been stated, therefore, it is evident that the preparation of terebene by the process above described may be carried out by any one that desires to do so without fear of interference with patent rights of any kind; and as the recommendation of this article for medicinal use by Dr. Murrell will no doubt create a demand for it, we have thought a statement of these facts and a description of the method of preparation would be useful to some of our readers.

RANUNCULUS ACRIS AS AN EPISPASTIC.

H. FROELICH (*Centrall. f. die Gesamnte Therapie*, October, 1885) states that fresh ranunculus taken internally acts as a powerful irritant to the entire alimentary canal, even producing severe inflammation, and that it seems to increase the secretion of urine. Externally, it also acts as an irritant to the skin. This latter property has been investigated by Froelich by rubbing up about three hundred grains of freshly-plucked flowers and blossoms, and then applying them, in the form of a poultice or of a dressing, to the skin. After an hour, the skin was reddened, somewhat painful, and after two hours, of a bright red color, swollen and tense. After the removal of the dressing, which was not in position more than two hours, a number of discrete, and later confluent blisters formed, so that on the fifth or sixth day the entire epidermis over the point of application could be removed; the wound healed again in ten to twelve days. This irritant action on the skin is slower of production than that of mustard, but is more intense, and is more comparable to that of the fly-blisters.

ACTION OF PELLETIERINE ON THE EYE.

According to the Paris correspondent of the *British Medical Journal* (November 28, 1885), M. GALEZOWSKI read a paper before the Académie de Médecine on the action of pelle-

tierine on the motor nerves of the eye. His researches are based on the ocular disturbance which occurs in subjects who absorb pelletierine; they are affected with diplopia. The observance of this fact induced M. Galezowski to prescribe pelletierine when there is paralysis of the third and sixth pairs. Iodide of potassium and blisters have failed where pelletierine has cured; the preparation used is syrup of pelletierine, 1 gramme (15 grains) per 120 parts of syrup. From three to six doses were administered. Unfortunately, this substance is excessively dear. M. Galezowski hopes to meet this difficulty by administering pelletierine in subcutaneous injections.

ALCOHOLIC TREATMENT OF DISEASE.

In a paper recently communicated by MR. GEORGE STURGE to the Hospitals Association, some very interesting figures are given representing the consumption of alcohol in various London and provincial hospitals (*Med. Press and Circular*, January 6, 1886). From the examination of one hundred and forty reports of hospitals, chiefly in England and Scotland, Mr. Sturge ascertained that great diversity in the practice of using alcoholic drinks as part of diet exists, and in some cases this practice has very much decreased. It appears that the consumption of alcohol varies from ten shillings and seven pence per patient in the Brompton Hospital to ten and three-quarter pence in the Manchester Infirmary. In the Middlesex Hospital the amount per patient was four shillings and three pence, while presumably the same class of disease was treated in the same number of patients in the Westminster Hospital at two shillings a head. In the provinces the Cambridge Infirmary tops the list with an expenditure of six shillings and seven pence per patient, while the Manchester Infirmary, which deals with a class of patients much more likely to need stimulation, outlayed only a seventh of the money—ten and three-quarter pence—to produce similar results. To illustrate the possibility of working a hospital satisfactorily on a greatly reduced expenditure on alcohol, Mr. Sturge points out that in ten years the expenditure of the Middlesex Hospital on alcohol has come down from ten hundred and seventy-nine pounds to five hundred and forty-seven pounds, while that of the Manchester Infirmary has fallen in the same period from seven shillings and two and one-half pence per patient to ten and three-quarter pence. Mr. Sturge states that

at the London Temperance Hospital two thousand eight hundred and sixty-two patients were treated at a mortality rate of less than five per cent., but of course no safe deduction can be made from this statement until we know whether the cases treated were on an average of the same type and character as those in the general hospitals. We are, however, safe in concluding that there is "something rotten" in the hospital system which admits of these diversities of practice in the various institutions. If the Manchester Infirmary can do full justice to its patients on an alcohol allowance of ten and three-quarter pence, it is a monstrous abuse that Cambridge should waste six shillings and seven pence on an article which, if it be not necessary, is at best a luxury, and at worst, an injury to the patient. What right has any institution to beg for public charity, and when it receives that charity, to throw it away on an article which—judging from the experience of other institutions—seems to be no more useful in most cases than lollypops would be?

PILOCARPIDINE, A NEW BASE IN JABORANDI-LEAVES.

Merck has succeeded in isolating a third base from the leaves of the jaborandi. This body, which has been studied by HARNACK, who has given it the name of pilocarpidine, in its free state is a syrup, which, in the form of a nitrate, forms voluminous columnar crystals resembling those of saltpetre. Its chemical properties are apparently identical with those of pilocarpine, although, like the latter, it is not precipitated from watery solutions by chloride of gold. Like pilocarpine it is readily transformed into an amorphous base endowed with physiological properties similar to those of atropine, and which Harnack proposes to designate under the name of jaboridine. As regards physiological action, pilocarpidine appears to closely resemble pilocarpine.—*Gazette Méd. de Paris*, No. 42, 1885.

THE ACTIVE CONSTITUENT OF THE ROOT OF BAPTISIA TINCTORIA.

According to VON SCHROEDER (*Pharm. Post*, October, 1885), the active constituents of this root consist,—first, of a glucoside, baptisin, which is insoluble in water, and which acts physiologically, like the indifferent bitter substances; second, a glucoside, baptin, which is soluble in water, from which it crystallizes in microscopic needles; it is a feeble laxa-

tive; third, of an alkaloid, baptitoxine, which is poisonous in small doses. This alkaloid in a frog produced arrest of respiration and then central paralysis. In mammals it causes acceleration of respiration and increase of reflex action. Death follows as a consequence of paralysis of respiration.

A HIDDEN DANGER.

The risk of conveying parasitic disease by means of the brushes and combs used in hair-dressing is not an imaginary one. It is no doubt much reduced in the better-class establishments by careful attention to cleanliness of the implements used, but even in them accidents are liable to occur at times from forgetfulness or neglect. A rush of customers cannot always be controlled, and there may not be time in each case to provide against the transference of contagion, which, perhaps, may be exceptional, and, as a rule, unlooked for in the course of a given business. Such unusual circumstances have nevertheless to be considered and dealt with. Some will insist that a good supply of brushes in permanent use, with regular cleansing, is the only reliable guarantee for all emergencies. Against the grounds of this argument nothing can, of course, be said. If the plan is borne out in practice, no ill can come of it. At the same time further suggestions are both admissible and welcome. Among such it may be well to note a method, in favor of which all others have been discarded by a Liverpool operator. This consists in supplying each customer with a separate and personal brush, which is, in ordinary phrase, "given in" with the hair-cutting. The plan appears to pay, and we may readily believe the assurance of its originator, that by its employment the fear of parasitic troubles is reduced to a minimum. A comb is not mentioned as being given along with the brush; but this, again, can be much more easily and rapidly disinfected as required, and practically, we suppose, may be left out of account. Certainly the novel arrangement with regard to brushing is a gain on the side of healthy practice.—*Lancet*, January 2, 1886.

A NEW BALSAM.

In the *Archiv der Pharmacie* (November, 1885, p. 817) DR. P. ZIPPERER describes and illustrates the structure of the root of *Paramecia vulneraria*, Radl., which is used by the natives of the Philippine Islands, as well as by

the residents there, to furnish a kind of balsam that possesses remarkable healing properties. This is known by the name of Cebu, or Tagul-away balsam. It is prepared by boiling the bark of the roots and twigs, as well as the leaves, of the plant in cocoanut oil, and forms a yellowish-white oily liquid having a peculiar odor. Dr. Zipperer's examination of the plant shows that it contains 8.5 per cent. caoutchouc in its tissues and three per cent. resin soluble in alcohol, and to these constituents its value appears to be due. Dr. Zipperer states that during two years' residence in the Philippines he had seen the balsam used by European doctors, as well as by the natives, with great success in various skin-diseases and for healing wounds. It appears to promote an unusually rapid cicatrization. The plant is a climber, growing in the mountainous declivities of the island of Cebu, whence it is chiefly obtained.—*Pharm. Journal and Trans.*, November 28, 1885.

THE PREVENTION OF BALDNESS.

It has been estimated that one-half the adult men of American birth living in our cities are bald-headed. The estimate is not exaggerated, if it is applied to persons above the age of thirty, and it may be rather under the mark. If, now, it be conceded that one-half of our American business and professional men are bald at the present time, it would be interesting to speculate as to the condition of the heads of their descendants some hundreds of years from now. The probabilities point toward a race of hairless Americans, for baldness is extremely liable to be propagated in the male line, and to appear a little earlier in each generation. The American nation is threatened with the catastrophe of a universal alopecia.

It appears to be worth while, therefore, to consider the subject of prevention, since no means have yet been found for the cure. Why are so many men bald before their time?

The answer has almost always been that it is due to the excessive strain and ceaseless mental and physical activity to which American methods of business and modes of living conduce. From the visitors' gallery of the Stock Exchange, for example, one views a mob of shining pates belonging, as a rule, to rather young men.

Any reformer, however, who expects to prevent baldness by changing American habits may as well stop at once, for he will surely

fail. Now, there may be, perhaps, help in some other quarter. The sons of prematurely bald fathers should bear in mind that if they wish to save their hair it will only be through industrious attention to their scalp. This much-neglected surface should be thoroughly cleansed at certain intervals. It should be carefully and regularly examined, and if it be unhealthy, dry, and scurfy, the proper applications should be made to it. The wearing of unventilated hats is one of the greatest sources of failure of nutrition of the hair, and these must be avoided. The beard never falls out, because it gets plenty of sunlight and air. These are what the hair of the scalp needs, also. Women are less bald than men, because, for one reason, their scalps are better ventilated. In fine, civilization has made the hair-producing organs of the scalp delicate and feeble. They have to be nursed and cared for, or they atrophy and disappear. Young Americans who do not wish to lose their hair before they are forty must begin to look after their scalps before they are twenty. —*New York Med. Record*, January 23, 1886.

ICE TO THE SPINE IN OBSTINATE VOMITING.

DR. W. L. DAVIS reports (*Mississippi Valley Med. Monthly*) a case of vomiting in typhoid fever in which every remedy, even pellets of ice, was rejected by the stomach. He applied ice to the lower part of the spine in considerable quantity, and the vomiting instantly ceased; a profuse perspiration followed. The use of ice was only persisted in when indicated; and cool sponging was instituted with marked benefit, so that the ice was only occasionally required. Recovery in the average time took place.

SUBCUTANEOUS INJECTIONS OF ATROPINE AND MORPHINE FOR THE PREVENTION OF CHLOROFORM-SYNCOPE.

In 1880, Dastre and Morat, starting with the assumption that the cause of chloroform-syncope was to be found in the action of the chloroform vapor on the pneumogastric, attempted to prevent arrest of the heart during chloroform-narcosis by means of atropine. Acting on this suggestion, AUBERT (*Centrall. f. die Gesamte Ther.*, October, 1885) has employed this method with great success in preventing

syncope in chloroform-narcosis. He employs a solution containing $\frac{1}{10}$ of a grain of sulphate of atropine and $1\frac{1}{2}$ grains of the hydrochlorate of morphine in 160 minims of distilled water. On this solution a Pravaz syringe is injected twenty or thirty minutes before the administration of the chloroform. The advantages of this method are claimed to be its safety and the rapid production of anæsthesia, rarely requiring more than two minutes, the absolute rest of the patient, the readiness with which the patient is aroused, and the slightness of the after-effects.

INFLAMMABLE COSTUMES.

Several instances of death have recently formed the subject of inquiry, during which it has been elicited that while dressing themselves in the light costumes usually worn at evening parties, the victims of these accidents have been severely burned as a consequence of their flimsy costumes becoming ignited. Often it is a candle held incautiously near the skirts that does the mischief; at other times the unfortunate pleasure-seeker approaches too near the fire, the exceedingly light character of her dress enabling it to be readily drawn to the flame by the natural current towards the chimney, and so leading to its destruction. In all these cases, however, the prime cause of the accident is the highly inflammable nature of the material out of which ball costumes are manufactured; and it is quite clear from the narratives of the painful accidents recorded within the last few days, that but for this circumstance the fatalities would not have happened. It is, therefore, the more essential to urge upon society the great importance of adopting some adequate means of obviating so great a danger to life in the future; and the most simple and effectual plan in this connection seems to be to prepare the dress-material employed in such a way as to ensure its being proof against fire. To this end several methods have been proposed, but we believe that which affords the greatest satisfaction is to steep the muslin or other garment in a solution of tungstate of sodium, whereby it is rendered quite non-inflammable, and may be worn with impunity in dangerous situations. It is much to be desired that the public should be aroused from its apathy in respect to this matter, and show an interest in a question of so much importance to itself.—*Med. Press and Circular*, January 6, 1886.

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Original Communications.

NOTE ON PAPAYOTIN.*

By A. JACOBI, M.D., NEW YORK,
President of the New York Academy of Medicine.

THE trunk and fruit of the South American melon-tree, papay-tree (*Carica papaya*), contain a juice which coagulates readily into what Peckalt called papayotin, and a small quantity of serum. The digestive ferment, called papain by Wurtz and Bouchut, papayo-

tin by others, is obtained by treating the juice with alcohol. It digests a thousand or two thousand parts of moistened fibrin, according to others two hundred, when cool or warm. Muscular tissue gets soft in a five per cent. watery solution within half an hour. Pulmonary tissue is not altered in this manner. The living mucous membrane is not changed at all. Very weak solutions have no effect; solutions of one-half of one per cent. are but little effective.

The mucous membrane is so little affected that dogs, cats, and rabbits, which took from 2 to 5 grammes (30 to 75 grains), showed no symptoms, nor any changes in their digestive mucous membranes. But rabbits and dogs died five minutes after a subcutaneous injection of 0.05 to 0.1 gramme (1 to 1½ grains).

* Read before the Medical Society of the State of New York, February 2, 1886.

The therapeutical administration of papayotin must be based on the following facts: that it is innocuous when taken internally; that it is dangerous when used subcutaneously; and that its injection into the blood paralyzes the heart and nervous system. Griffith Hughes recommended it in several cutaneous eruptions, Bouchut in cutaneous carcinoma, Albrecht for the easier digestion of meat, Tussac against intestinal worms, Rossbach for the purpose of dissolving diphtheritic (croupous) membranes (*Zeitsch. f. Klin. Med.*, vi. H. 6). A brief notice on papain is contained on p. 1135 of that remarkable book, Stillé and Maisch's National Dispensatory, third edition, 1884.

During the third "Congress for Internal Medicine" papain was the subject of discussion by Dr. Finkler, of Bonn, and Rossbach, of Jena. They compare its effect with that of pepsin and pancreatin, with this exception, that it will prove effective in smaller quantity and with less water, between the ordinary temperature and 60° C. (140° F.); best, however, in a temperature of 40° C. (104° F.), and in slightly acid, neutral, and alkaline reaction. Thus it is reliable in rectal alimentation, as the solution to be introduced may be allowed to be neutral.

Diphtheritic membranes are dissolved in a few hours, in a few cases after a day only. Temperatures of 104° and 105° would sink to the normal standard after the removal of the membranes. This observation was made by both Finkler and Rossbach, and proves the rapidity of both absorption and elimination of the diphtheritic poison, to which I directed attention in my treatise on diphtheria (1880). Insufficient results were obtained by some preparations. These were found to consist, under the legitimate rules of modern tradesmen and manufacturers, of milk-sugar. From that very cause ill success has attended some of my cases years ago, while others appeared to encourage me in continuing the use of papayotin. For a year or more I lost confidence, until a few months ago I advised the resuming its administration in a number of cases I was called to see. The report of a few brief cases will suffice.

CASE I.—On the evening of December 29, 1885, I saw a patient of Dr. Kremer's, a delicate boy of 11 years. The symptoms of pharyngeal diphtheria, complicated with some glandular cervical swelling, had lasted nearly a week. For three days past there was croup, of not a very urgent character, so that tracheotomy was not indicated for the time being. The pharyngeal

membranes were whitish, solid, and large, covering the tonsils, extending to the edge of the soft palate; the uvula was swollen, and the membranes extended backwards and upwards. The hourly application of papayotin to the throat was recommended. The mixture was 1 of the remedy, 4 of water, and 4 of glycerin; it was continued through the night. The doctor reported to me the almost complete disappearance of the membrane at his next visit, the following morning. As I learned later, the case terminated fatally, after a short improvement, by the gradual increase of the laryngeal obstruction, which necessitated a hurried tracheotomy, and resulted in death a few days after the operation.

CASE II.—In the early hour of the afternoon of January 1, 1886, I was called to see a patient of Dr. Hubbard, a boy 1 year and 6 months old, suffering from croup. There was hoarseness, long-drawn inspiration, some supraclavicular and infraclavicular and epigastric recession,—that is, the symptoms of laryngeal stenosis. There was no membrane in the mouth or throat, and but little congestion of the fauces. There was no fever (the temperature being taken, as I always do, in the rectum), and therefore the diagnosis was membranous laryngitis. The indication for tracheotomy was not urgent, and the operation postponed. Meanwhile, $\frac{1}{4}$ of a grain of corrosive sublimate was ordered every half-hour for the first six or eight hours in considerable dilution, and the temperature and the moisture of the air in the room regulated as I found them before. Dyspnoea increased more rapidly than we expected, and tracheotomy was performed at 8 P.M. The general treatment was continued. No untoward symptoms showed themselves until the third day, then the temperature rose somewhat, the respiration lost its normal character, the occasional moist râles disappeared, respiration became more dry and sawing, indicating the progress downwards, into the trachea and bronchi, of pseudo-membrane. There was a slightly cyanotic hue on the upper lip. The internal and dietetic treatment was not changed, and papayotin was used in 4 parts of water and 4 parts of glycerin in such a manner that the feather from a live pigeon's wing was dipped into the liquid, at first every hour, later on every two hours, and introduced through the hard rubber tube way down into the trachea and below, and turned round several times for the purpose of leaving the medicine inside. After a few hours shreds of membrane were coughed up. The treatment

was continued through some days. More membranes came; gradually they became softer and macerated, and finally the secretion became muco-purulent and mucous. Before the end of the second week the tube was removed.

CASE III.—H. B., æt. 15; France; resident New York City; seen in consultation, January 19, 1886, with Dr. Heinemann. Patient had been ill for three days. Had severe nasal and tonsillar diphtheria.

Treatment.—Tr. ferri potas. mixt.; local tr. ferri applications; bichloride and acid. bor. spray, and douché for nares; supporting treatment.

Within five days the nares were freed. The tonsils improved considerably, but at the end of three days the improvement in tonsils remained almost stationary. A fair amount of glandular swelling about the angles of the lower maxilla.

My recommendation to use papayotin, i; aq. and glycerin., aa ii, mixture, and apply it freely with the brush, was now resorted to.

Dr. Heinemann reports as follows: The papayotin was applied every hour. Within six hours the membrane presented a translucency, having been melted down to some extent. Within twelve hours the effect was decided, portions of the thin membrane coming away upon the brush without effort. Gradually the membrane seemed to be dissolved, and at the end of thirty-six hours it had disappeared. Only at a few points of ulceration did an eschar remain for some days longer.

CASE IV.—J. L. O., æt. 38; dentist; United States; seen in consultation May 15, 1885. Patient was under the care of Dr. H. N. Heinemann. On April 16, 1885, patient became ill with tonsillar diphtheria. Subsequently it extended to the nares.

The treatment consisted in the iron and potass. mixt. internally, local application of tr. ferri chlor. and glyc., spray of bichloride sol. and acid. bor., and douche for nose. Supporting treatment in addition as usual.

Despite careful attention for four weeks the membrane came and went, the pharynx, soft palate, and tonsils clearing, and then again being recoated, one spot after another infecting and reinfecting the neighborhood.

On May 15, 1885, I recommended, upon consultation, the use of papayotin as a local application.

Dr. Heinemann reported to me as follows: "The membrane melted down under its use rapidly, and within forty-eight hours had completely disappeared."

PISCIDIA ERYTHRINA IN THE TREATMENT OF CONVULSIVE AFFECTIONS.

By S. A. NEWHALL, M.D., NEWTON, KANSAS.

ON January 9, 1886, I was called in haste to the bedside of Mrs. S., aged about 30 years; a tall brunette; married for four years, but has had no children. She has been subject to attacks of local congestion, oftenest in uterus or ovaries, occasionally in lungs, or stomach and bowels. She had complained all day of pain in the muscles of the body and limbs, and very frequent, severe pains in the head; but she refused to have me called until about eight o'clock in the evening, when she became wildly delirious. I found the patient in bed, maniacal, with staring eyes, with violent spasmodic contraction of the flexor muscles of the hands and feet, constantly begging for water, drinking all she could get, and yet with no relief. The pulse was regular, but rather full, about eighty beats to the minute, the temperature normal, as nearly as I could judge, as I could not keep her quiet long enough to use the thermometer. The spasms became constantly stronger, until they extended to the spinal muscles, producing the most violent opisthotonos I ever witnessed. At ten o'clock the tonic spasms were so violent that she stood upon the top of her head and her feet in bed in a perfect semicircle, requiring four strong men to hold her and prevent her injuring herself. These spasms succeeded one another in rapid succession, with only a moment's interval, accompanied with gnashing of the teeth, and at times frothing at the mouth, and when given water or medicine from a spoon she would snap the spoon or clutch it between the teeth, and at times the jaws were firmly set in tetanus.

I had watched the history of piscidia erythrina since its first introduction, and, from its action upon the cerebro-spinal nervous system and its anodyne effects, I decided to give it a trial, and sent to the druggist for two ounces; I gave 40 drops at 10 o'clock P.M., and in fifteen minutes was rejoiced to see its modifying effect upon the spinal muscles, and, in fact, upon the whole muscular system; the spasms became much less frequent and of shorter duration.

I repeated the dose in an hour, with increased and marked improvement, and at midnight gave the third dose, which began to show its irritating effect upon the stomach; but, in half an hour after the third dose, had the satisfaction of seeing my patient drop into a quiet sleep for a few minutes, and

awake rational and free from spasm. I left direction if the spasms returned in any degree to repeat the dose, but none was required until the next day, when they returned at about 2 o'clock P.M., when she was given 40 drops of piscidia, which produced such violent irritation of the stomach that she could not retain it. I was called at 7 P.M. to find her in violent spasms again, but not so frequent. I found it impossible to administer the piscidia by the mouth, and gave by enema one teaspoonful of the fluid extract and the same amount of hot water, repeating the dose every hour for three doses as before, with the same effect in arresting the spasmodic action and relieving all pain. The next day I directed one teaspoonful by enema at 2 and 4 o'clock P.M. This treatment was all that was required, and my patient was perfectly cured, and was attending to light household duties in three days from the last spasm.

In the THERAPEUTIC GAZETTE, vol. viii. page 331, is a careful study of the drug by George W. Winterburn, Ph.D., M.D., of New York, giving a clear guide to its physiological action, as well as to its therapeutic uses. Its anodyne effect is doubtless owing to the paralyzing effect upon the nerves of sensation, and its antispasmodic action is owing to the same paralyzing effect upon the motor nerves. There was a distinctly perceptible flushing of the face, with slight diaphoresis after the second and third doses, which I attribute to its relaxing effect upon the capillaries, and, consequently, prompt relief of the congestion, very similar to the relief produced by veratrum viride in pneumonia or pulmonary congestion.

ON THE NUTRITIVE VALUE OF SOME
BEEF EXTRACTS—AN EXPERI-
MENTAL INQUIRY.*

By THOS. J. MAYS, M.D.

DURING the last seven months my leisure time has been principally employed in efforts to determine the nutritive value of some of our principal beef preparations, and I beg your brief attention this evening for the purpose of bringing the results of these researches before you.

That there is no idea so erroneous as to be wholly devoid of truth, nor one so true as to be wholly devoid of error, is an ancient maxim, and its truth is probably as well illustrated in

the prevailing ideas of the nutritive value of the beef extracts as it is in anything else. A study of the extensive literature of the beef extracts shows the inconstant and indefinite opinions which have been held concerning their action, and also illustrates the fluctuations of thought which the medical profession is liable to undergo. Liebig, who was one of the first to invest this question with scientific interest, held no less than three different theories regarding their action during the last twenty years of his life. In his "Letters on Chemistry," published in 1851, he distinctly rates the beef extracts as nutriments, —i.e., as substances which are capable of supplying working force to the muscles of the body. In Auerbach's "Volkskalender," page 148, published in 1868, and in his "Chemische Briefe," issued in 1865, he expresses the opinion that they are merely condiments (genussmittel), and hence only act as stimulants to the process of digestion and to the general nutrition of the body. Later he conceived the idea that they are nutrients not only in the sense of supplying force to the body, but as furnishing material wherewith the bodily tissues are constructed. Since his death, however, medical opinion has by almost universal consent reverted to the second idea entertained by him, viz., that the beef extracts are of no or very little value as foods. It is true that this has been questioned by some whose clinical observations have led them to different conclusions, yet I do not know of a single work on physiology, therapeutics, or pharmacology that does not assign the beef extracts among the non-nutritious alimentary agents. Probably the most positive expression of this feeling among those who are considered modern authority on such subjects is that of Dr. Fothergill, in his "Handbook of Treatment, or Principles of Therapeutics," who, on page 537, says that, "as a food, beef-tea ranks low. It contains meat-salts, a small quantity of albumen, and a little gelatine, together with some advanced nitrogenized matters useless in histogenesis. But there is little in it to repair tissues, and less in it to sustain life, so far as our knowledge yet extends. There is little real force-bearing material in the protean compounds of beef-tea. For the starving fever-patient, to give him beef-tea alone is almost to give him a stone when he asks for bread. It makes him feel better for the time being, but that is due to its stimulant properties."

There can be no doubt that the cause of the prevailing scepticism concerning the nu-

* Read before the College of Physicians of Philadelphia, February 3, 1886.

tritive value of beef extracts is largely due to the experiments which were made by feeding animals exclusively on these preparations, with the result that all of them died within a short period of time. Indeed, Kemmerich affirms that they died more quickly than those which were left to starve from hunger. This has the semblance of proof that beef extracts are not capable of supporting life. Sober reflection teaches, however, that no animal can subsist continuously on any single food, and that such a test would unceremoniously refute the food value of any substance, no matter how nutritive it might be. But, beset with difficulties as this investigation evidently is, the question is not whether these substances are capable of sustaining life alone, but whether it can be shown that they contain any nutritive value at all, and, if so, how much. Here everything depends on the method which is employed to determine this question. It is imperative that this should be definite and exact. It must be able to show the functional state and condition of the organism before, during, and after the addition of these substances; or, in other words, it must demonstrate whether the organism is or is not capable of performing work when these substances are added to it.

To meet all these desiderata I selected the isolated frog's heart, which has already proved itself so pregnant with good results in the hands of Ludwig, Cyon, Kronecker, Bowditch, and others, in the full belief that it will show itself as capable here as it has in clearing up other problems in experimental physiology. Only quite recently Professor Yeo (*Journal of Physiology*, vol. vi. No. 3, p. 93) has succeeded in demonstrating with it the reduction of oxyhæmoglobin, a phenomenon the existence of which was assumed but never proven by direct observation.

The experiences of Professor Kronecker, Drs. Martius, McGuire, Von Ott, and others, show very clearly that when the frog's heart is well washed out with a 0.6 per cent. saline solution, and then allowed to beat with the same, its pulsations gradually get less in force and in elevation, until at last, in the course of an hour or two, it becomes entirely exhausted, and is unable to work any longer. But when this stage of complete fatigue is reached, and the heart is filled with blood or serum, it recommences to beat, and its pulsations gradually gather in strength and in elevation until their former altitude is attained. If, instead with blood, the heart were refilled with the saline or any alkaline, acid,

or even alkaloid solution, it would never show any sign of returning vitality. This observation means that the saline, alkaline, acid, and alkaloid solutions are devoid of material with which the heart can perform its function; and although it works while it is filled with these solutions, it does so at the expense of the nutritive material stored up in its own meshes, and not with any energy derived from these solutions. Indeed, Dr. Pohl-Pincus (see *Verhandlungen der Berliner Physiologischen Gesellschaft*, February 23, 1883) has brought forward evidence which indicates that in the wall of the frog's heart there exist lacunæ (nahrspalten) designed for the purpose of storing up nutritive material. As soon as this stored-up supply is exhausted it ceases to beat, and any solution which is now applied to it with a view to re-establish its pulsations must contain some elements which are capable of nourishing it. These essentials are found in the blood and serum of most animals. Dr. Von Ott (*Archiv. für Physiologie*, March, 1883) has also shown that milk has the power of nourishing the heart. And Professor Ringer (*Journal of Physiology*, vol. vi. No. 6), in following the same line of inquiry, found that both albumen and gelatine are capable of sustaining the heart's contraction. In my own work on the nutritive value of different concentrations of blood, performed in the Berlin Physiological Laboratory under the direction of Professor Kronecker (*pub. Verhandlungen der Berliner Physiologischen Gesellschaft*, January, 1883), I found that the amount of work of the frog's heart performed with blood depends entirely on the degree of dilution of the latter agent. Dr. McGuire found, however, that 1 to 3—i.e., one part of blood to three parts of saline solution—gave the best results.

In summing up the literature of the action of the frog's heart in its relation to our subject, we find the following: That the heart in performing work consumes oxygen; that after it is once completely exhausted it cannot resume its pulsations unless food-energy is supplied to it from the outside; that blood, serum, milk, albumen, and gelatine are capable of acting as foods and of restoring its power of contraction, but no other substances have heretofore been shown to possess this property; that the pulse-elevations and the amount of work which the heart is able to do depend in a great measure on the degree of concentration of the food. These data, moreover, demonstrate very fully that the heart does not exercise the function of a

purely circulatory organ in these experiments, but that it is an organic medium possessed of the power of assimilation, of transformation of energy, of contraction, and of respiration.

The apparatus which was employed in testing the food value of the beef extracts was the following: The heart, by means of a double cannula, on which it is securely but gently tied, is attached to a Kronecker-Bowditch heart-apparatus, and then through a mercury manometer and an appropriate glass needle it records its pulsations upon a revolving cylinder. The heart is fed or transfused through the double cannula from two Mariotte's bottles with any desirable fluid, and, in order to keep it pulsating regularly, minimum shocks of one Daniell's cell through a Du Bois sliding induction-coil were employed about every four seconds. Before testing the beef extracts the heart was in every instance well washed out with a 0.6 per cent. saline solution, after which it was allowed to work with the same until all its stored-up material was exhausted and its pulsations reduced to zero. Then a weak solution of the inorganic elements of the beef extracts, chiefly containing phosphate and carbonate of potassium and chloride of sodium, was carefully tested on the heart to find out whether it had any power to induce cardiac contractions, but it failed in every instance. The same was also found to be true of a solution of urea whenever it was tried. After this preliminary work a number of different dilutions of a beef extract previously prepared with a 0.6 per cent. saline solution (usually in the following proportions—1 to 100, 1 to 250, 1 to 500, 1 to 666, 1 to 1000, 1 to 2000, 1 to 4000) were alternately introduced into the heart and their effects noted. The stronger dilutions, like 1 to 100 to 1 to 500, had no influence whatever in restoring cardiac contractions; but in every specimen which was examined the dilutions from 1 to 666 to 1 to 2000 had the power of reviving and of maintaining the beats of the heart, as the following traces given by Valentine's Meat Juice clearly show:

EXPLANATION OF THE TRACINGS.

(To be read from top to bottom, and from left to right.)

(a) Heart filled with 0.6 per cent. saline solution; (b) refilled with same; (c) refilled with same; (d) filled with phosphate of potassium solution, 1 to 1000; (e) filled with saline solution; (f) filled with Valentine's Meat Juice, 1 to 1000; (g) refilled with same; (h) filled with phosphate of potassium solution, 1 to 1000; (i) filled with saline solution; (j) filled with Valentine's Meat Juice, 1 to 1000; (k) refilled with same.

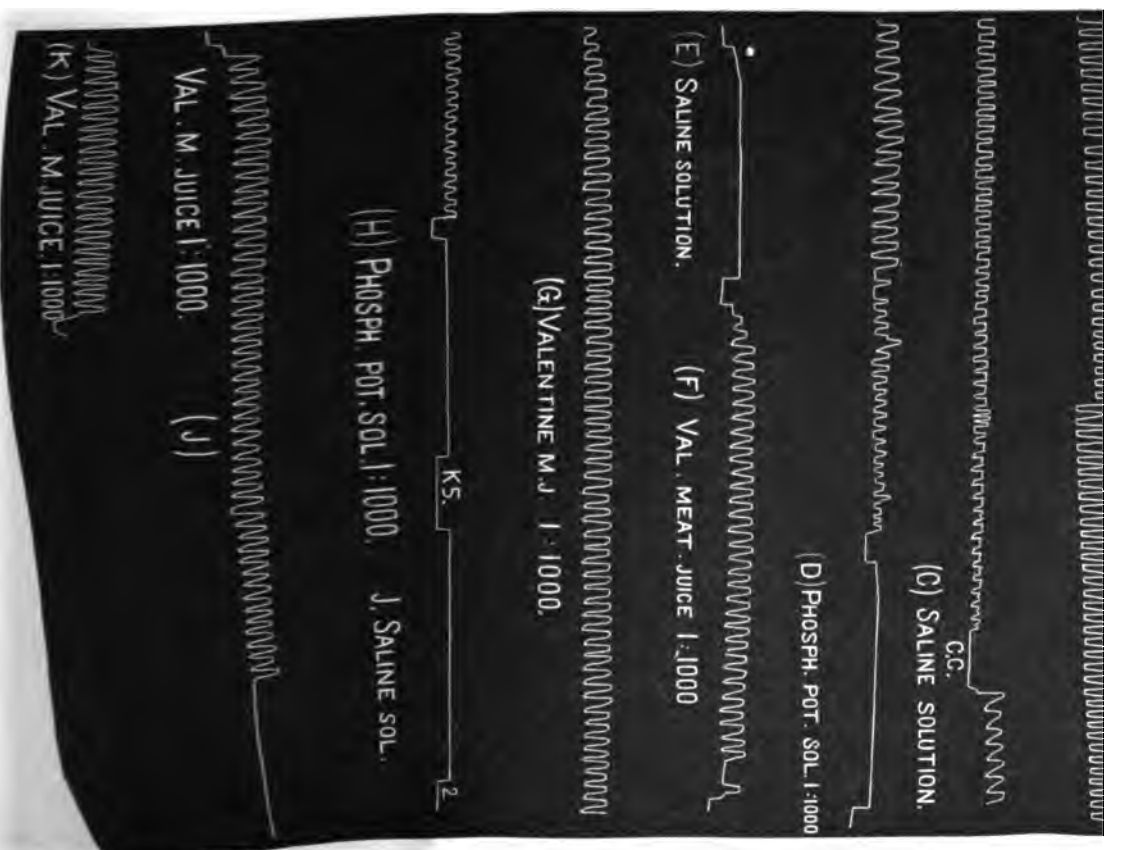
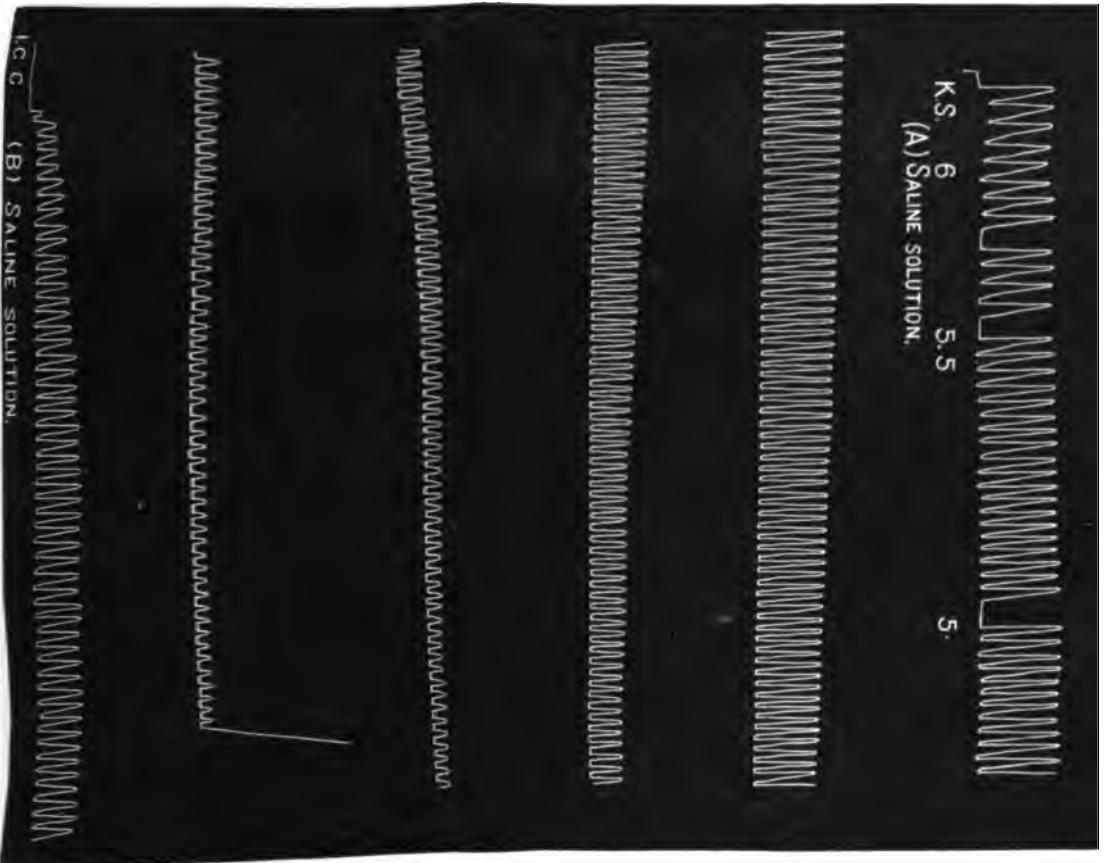
In this experiment the heart was filled with a 0.6 per cent. saline solution (a), and allowed to work with it until it was fatigued; at (b) and (c) this was repeated, and the pulse-elevations grew after each filling, not because the saline solution conveyed any nutriment to the heart, but because it had not consumed all the energy stored up in its walls. At (d) and (e) neither the phosphate of potassium nor the saline solution could revive the heart, showing that its whole store of energy was exhausted. At (f) and (g) Valentine's Meat Juice was introduced, and the pulsations grew to about half their original height. The other beef preparations which were examined in the same manner as Valentine's Meat Juice were Reed & Carnrick's Beef Peptonoids, Parke, Davis & Co.'s Sarco-Peptones, Johnston's Fluid Beef, Cibil's and Liebig's Extracts, besides milk, and all gave evidence that they possessed nutritive properties. Although the amount of nutrition varies somewhat in each specimen, as will appear later on, every one gave tracings substantially similar to those given by Valentine's Meat Juice.

Judging from these data, I think the following deductions can be made concerning the influence of the beef extracts on the frog's heart:

1. That they are absorbed and assimilated.
2. That they contain material which has the power of inducing muscular contraction, a power which has heretofore only been shown experimentally to exist in the higher animal albumens or proteids.
3. That hence, whatever else they may be, they are nutrients in the full implication of that term.

After it was thus demonstrated that these beef preparations contained definite nutritive properties, it was deemed desirable to ascertain the value of each, and means to this end were instituted by comparing their effects with those of a two per cent. solution of dried bullock's blood alternately on the frog's heart in the following manner: In the first place, the heart, after being washed out, was filled with the two per cent. blood solution, and then allowed to beat until its pulsations were reduced to a minimum, or until the whole nutritive supply of the blood solution was consumed, after which it was washed out again and filled with a solution of the beef preparation to be tested, and allowed to beat with it until its pulsations were again reduced to a minimum. A large number of comparative tests were made of each of the above-named beef preparations in this way, and the

ORIGINAL COMMUNICATIONS.



following products were obtained, which indicate the mean percentage of the number of pulse-beats given by each preparation, while that of blood is taken as 100. These figures are probably not absolutely true, but they give an approximate idea of the nutritive worth of these extracts when compared with that of a two* per cent. blood solution, which is capable of producing a normal cardiac contraction.

	Mean Percentage of Number of Pulse-beats.
Liebig's Extract of Beef.....	58
Johnston's Fluid Beef.....	59
Valentine's Meat Juice.....	60
Cibil's Extract of Beef.....	61
Sarco-Peptones (Parke, Davis & Co.)	62
Beef Peptonoids (Reed & Carnrick)..	74
Milk.....	100
Two per cent. solution of dried bullock's blood.....	100

From this table it appears that all these preparations contain very nearly the same amount of nutritive material except the Beef Peptonoids, which contain from ten to fifteen per cent. more than the others. It must not be forgotten in this estimation that the Beef Peptonoids are not a pure beef extract like the rest, but a compound of the latter with milk and gluten. Therefore, in order to get at the true value of this preparation, it is important to test each ingredient. Milk alone gives as good results as the blood solution, as can be seen from the table, and there is no doubt that a portion of its valuable property is due to this agent.

The next question which arises in this investigation is as to which of the many organic bodies resident in the beef extracts this nutritive property is due; and I must confess that, principally owing to the difficulty of obtaining these organic extractives, this portion of the work remains incomplete, but I am making preparations to resume it at an early day. It can be safely stated, however, that the inorganic elements of the beef extracts contribute no share to this result, for the phosphate of potassium solution contains all these, and in every instance where this was tested it failed to bring out the least cardiac reaction. Hence these can be left out of consideration.

When finely-divided beef muscle is exposed to the action of about four or five times its own weight of cold water for four or five hours, and then well pressed out, it loses from sixteen to twenty-four per cent. of its original

weight. In this watery solution is contained from two to fourteen per cent. of flesh albumen, while the remainder is made up of kreatin, kreatinin, sarkosin, sarkin, xanthin, carnin, inosit, fat, glycogen, and the inorganic elements, while in the residue there is left nothing but fibrous tissue, principally composed of muscular fibres and connective tissue, which is tasteless, rejected by animals, and entirely unfit for nutrition. Therefore, it is very probable that all the nutritive element of beef muscle resides in its organic extractives.

Now, there cannot be the least doubt that the variable amount of albumen contained in the beef extracts furnishes some of the nutritive property displayed by them, but it is far from my intention to claim that this is exclusively due to it. Indeed, I have found altogether unexpected indications during the investigation which may on further examination throw some more light on this question. One thing, however, remains steadfast throughout, and that is, if the albumen of flesh is not the sole nutritive element in these beef preparations, then some or all of the organic bodies which they contain must be nutritious, and can no longer be regarded as effete products of the animal body.

It is not necessary to point out, then, that the multitudinous composition of these extracts makes them a very valuable class of alimentary substances, both for nutritive and constructive purposes; and before closing this interesting subject let me refer very briefly to the practicability of the subcutaneous introduction of these agents. I think it is quite evident now that these preparations are assimilated and utilized by the frog's heart without previously passing through a digestive process, and we have no reason for believing that this does not also obtain in the human organism; hence, in conditions where the stomach has an intolerance of food, or where there is any hindrance to the introduction of the same through the primary passages, the object of feeding the patient can readily be secured by introducing a suitable preparation hypodermically. A number of years ago I treated several such patients with Valentine's Meat Juice, which, on account of its complete solution in the normal state, is probably preferable for this purpose. I injected from fifteen to twenty minims three times a day with good effects. I failed, however, to keep a record of these cases, but recollect that one was a case of persistent vomiting caused by a severe blow on the head, and that after each

* Two per cent. solution of dried bullock's blood gives as good cardiac contractions as fresh blood, in proportion of 1 to 3.

injection the patient expressed himself as being stronger and feeling as if he had eaten something. Not the least irritation was produced at the point of injection, and I think this field deserves further investigation.

In conclusion, I wish to thank Dr. Marshall, of the University of Pennsylvania, and Dr. Leffman, of Jefferson Medical College, for valuable aid in prosecuting these researches.

CASE OF PERFORATING ULCER OF THE STOMACH, WITH REMARKS.

By H. C. WOOD, M.D.

THE following case has seemed to me worthy of a brief record on account of the difficulties of the diagnosis and of the therapeutic lesson to be drawn from it.

I was recently called, about eleven o'clock in the morning, by a most urgent summons to see a patient. On going to the house, was told that the patient had enjoyed throughout life extraordinarily good health; had never been sick; at all times remarkably free from the pains which seem to belong to her sex; had been accustomed to take enormously long walks without suffering; to run up and down stairs freely; and in every way to be extremely active. The only physical annoyance which she had ever had was from occasional sour stomach and mild dyspeptic symptoms. On the evening before my visit she had been out; in the morning had taken her breakfast as usual; went up-stairs for something, and suddenly cried out for help, stating that she had a frightful pain in her abdomen. I found a woman about 40 years of age, large, robust, but somewhat pallid-looking, evidently suffering intensely. The abdomen was very slightly tympanitic, was distinctly tender over the whole of it, but without any localized spots of excessive tenderness. The pain was over the whole abdomen, but was especially referred for its focus to the left iliac fossa. There had been no sick stomach. I was told that Dr. — was the family physician, and had prescribed for the lady the day before some soda-mint or similar palliative for sour stomach, and I was asked to take charge until his arrival. Morphine was administered hypodermically, and I returned about an hour later. At this visit I noted that the face of the patient had changed entirely. At the first visit it was simply that of a person suffering pain. It had now taken the expression which Dr. J. Forsyth Meigs used to call a decomposed face,—was distinctly what I suppose is meant by the

Hippocratic face. It had the expression which I have learned means a mortal illness. The abdominal tenderness now was very markedly less, and there was much pain in the right shoulder. More morphine was administered. In the course of a few minutes the pain in the shoulder became more intense, whilst that in the abdomen grew less. About half-past one o'clock the condition was as follows:

Abdomen only slightly tender, with but little pain in it. In the upper portion and right shoulder there was such a severe pain that Miss — begged that we might relieve her or that she might die. The pulse was rapid and small, feeble but not irregular; the temperature was not taken with the thermometer, but was below rather than above normal. The pain in the shoulder was increased very greatly on movement, so that it was impossible to raise the patient up; it did not, however, radiate down the arm. Auscultation revealed a distinct systolic mitral murmur of a soft character.

I was completely at a loss in making the diagnosis. The shifting character of the pain and the excessive violence of the paroxysms, which were provoked by attempted movements, of course led me to the supposition of a violent rheumatic attack, which did not, however, account for the Hippocratic face. The heart-murmur led to the suspicion that the rheumatic inflammation was attacking that organ, but it seemed to me impossible that there should be a rheumatic myocardiac inflammation sufficient to produce a murmur and the facial evidences of fatal illness without irregularity in the heart's action. On returning shortly after this I was told by a servant that the family physician had arrived and my services were no longer needed.

Since the death of the patient, this gentleman, who is one of the most skilful practitioners in Philadelphia, has written me as follows:

"On my first seeing her during the attack I found the pupils slightly contracted, showing the action of the morphine you had administered. I examined the abdomen. It was not particularly sensitive to pressure. I suppose the peritonitis had hardly begun. She complained more of the sensitive surface where the mustard-plaster had been. I felt the hard mass in the abdomen about the umbilicus. It was insensitive, and, having no suspicion of uterine disease, supposed it fecal matter rendered more prominent by spasm of the bowel. While sitting by her she was seized with agonizing pain in the left shoul-

der, which inhibited the heart-beat for several seconds. An effort of movement sent it to the region of the left quadratus, and on raising her from the pillow the erector-spina became rigid, and again in laying her down, just as in lumbago. This shifting muscular spasm led me to the conclusion that the pain was rheumatic in type.

"The following morning a second time I was sent for in haste early, about eight o'clock, but found the patient dead. The family said that during the night she had suffered no pain, but was very restless; that in the morning she complained of feeling excessively weak and cold, and that a cup of coffee was given her, which she said 'warmed her and made her feel much better'; and that almost immediately after that the change came suddenly.

"At the autopsy, a fibroid tumor of the uterus about four or five inches in diameter was revealed. There was also chronic thickening and hardening of the mitral valve, which accounted for the murmur heard during life. Two gastric ulcers were found, one situated upon the anterior, and the other the posterior wall of the stomach, about the middle, and nearly but not absolutely symmetrical; the anterior ulcer was the larger of the two and had perforated the walls of the stomach, making a circular, punched-out opening about one-third of an inch in diameter. The appearance of the edge of these ulcers suggested that they were of old date."

The lessons to be drawn from this case are several.

The existence of so much chronic disease without its being suspected is remarkable. There is an extraordinary difference in what may be called the pain-reactions of people. In some the slightest functional disorder produces an overwhelming amount of pain; in others the gravest lesions may occur with little or no suffering. There seem to have been no uterine symptoms; at least none were ever spoken of by the woman which should have directed the attention to the uterus. One fact which I have not mentioned in the account of the case, of which only since the death I have been told by her family, is that the patient suffered from repeated nose-bleedings. This might, if reported to the physician, have directed his attention to her heart; for, in my own experience, this symptom is very often connected with unsuspected cardiac disease.

The dyspeptic symptoms appeared never to have been violent. The doctor writes me that he had never seen her with any difficulty

which a little bismuth and soda did not relieve in the course of a few days.

According to the statistics of Welch, in about five per cent. of all the autopsies made in Europe either open ulcers or gastric cicatrices are found. It is believed by most authorities that ulcers of the stomach are much more frequent in Europe than in this country; but I cannot help suspecting that at least one reason why gastric cicatrices are less frequently found in the United States is that they are less carefully sought for. It is only a few days ago that I was called in consultation to see a lady about sixty years of age, supposed to be in perfect health, but suddenly attacked with repeated hæmatemesis, which almost proved fatal, due without doubt to gastric ulcer. The physician attached to the coroner's office in Philadelphia informs me that he has had three autopsies on cases of sudden death from gastric ulcer within the last year,—two from perforation, one from hemorrhage,—in which cases there had been no previous suspicion of disease. When, along with dyspeptic symptoms, any local tenderness is found localized in the epigastrium, or a frequent pain in the back even as high up as the shoulders or as low down as the lumbar region, treatment for gastric ulcer should be instituted, unless some other explanation of the symptoms can be made out.

A very curious and at present hardly explicable symptom in these cases of gastric ulcer is the fact that the seat of the pain is not the seat of the lesion. These distant pains, which, for the lack of a better name, may be called reflex pains, seem to be especially felt in abdominal diseases. The frequent association of pain in the right shoulder with disease of the liver is well known, and the records of perforation of the stomach show that pain in the left shoulder is present in a very large proportion of the cases.

In Miss —, the shifting of the pain over the abdominal region to the extreme upper part of the shoulder was very remarkable, and especially was the occurrence of violent spasm noteworthy; indeed, this latter suggests that possibly there was a slight, deep-seated spasm of the muscles during each paroxysm of pain, and that, therefore, the attack was to be considered a reflex cramp. Tenderness in the abdomen, in the case of Miss —, undoubtedly lessened and almost disappeared after the first hour of her attack; this, too, at a time when the shoulder pain was steadily increasing in ferocity. In the latter stages of her disease pain ceased almost en-

tirely. The explanation of this seems to be paralysis by shock, causing excessive peripheral irritation of the nervous centre.

It is probable that the immediate cause of death was the taking of the cup of coffee, and a sudden irritation of the abdominal nerve-fibres and inhibitory arrest of the heart.

In a case like the present the diagnosis during life could hardly have been sufficiently positive to have warranted active treatment; but supposing there had been symptoms previously pointing towards ulcer of the stomach, such as known localized tenderness, vomiting of blood, etc., the question would naturally arise as to the propriety of surgical interference. With a breakfast inside of the abdomen, but outside of the stomach, the patient undoubtedly had no possibility of recovery through the unaided efforts of nature.

Although I do not know that it has ever before even been suggested, much less done, it seems to me clear that, with the results of modern antiseptic surgery before us, we ought, in a case of sudden perforation and escape of the contents of the stomach freely into the abdomen, to open the abdomen thoroughly, wash out the whole cavity, pare the edges of the gastric ulcer and sew them up, or bring them to the front, so as to create a gastric fistula and close up the wound. Of course the chances would be greatly against the living of the patient; but without such operative procedure death is inevitable.

SOME RARE FORMS OF TINNITUS AURIUM,
OR NOISES IN THE EARS, SUBJECTIVE
AND OBJECTIVE.

BY LAURENCE TURNBULL, M.D., Ph.G.*

SUBJECTIVE AND OBJECTIVE TINNITUS
AURIUM.

MRS. F. A. L., aged 47; suffering with tormenting noises in her ears for eleven months; applied April 16, 1884, to me for treatment; left ear affected with painful ear-ache some time before. On examination, hearing-distance was normal; tuning-fork heard in air; meatus dry and irritable; no discharge; no pain; tinnitus aurium of every variety of sound imaginable, all of which were subjective. The right membrana tympani slightly sunken, and very small reflex; the left Eustachian tube more obstructed than the right; the nasal passages were irritable,

and the right enlarged, hypertrophied, and congested; throat and tonsils were inflamed, with slight naso-pharyngeal catarrh. She had no hereditation, but her constitution was not strong. She was greatly prostrated, had fissure of the rectum, and hemorrhoids which had been operated upon, together with functional disease of the heart.

Treatment.—For the local affection, she was directed to use boro-glyceride to the ears and nose; the hypertrophied tissue I removed by cutting. She was also directed mountain air, from which she derived great benefit during the summer.

February 27, 1885, she reports noises much less loud and less persistent; has "short intervals of peace," but any mental or physical cause which lowers her system tends to increase the tinnitus aurium.

CHIRPING OF SPARROWS AND MUSICAL
SOUNDS.

Mrs. M. T., aged 62; a lady of great musical talents, who suffered in girlhood from a severe and protracted attack of scarlet fever, and a second attack later, which left her with a discharge from the nose for a long period, yet she had a remarkable contralto voice. Later in life she had a series of colds in her head and throat which terminated in a sunken drum-membrane and opacity, with deafness. Within the last six months of 1884 she was also attacked with dizziness (vertigo) on rising from her bed, and was annoyed by the chirping of sparrows and a certain musical note, which occurred during the night. She would inform her husband in the night that she heard them, and inquire if he did not also hear them. I placed her upon a mixture of sherry wine and tincture of nux vomica, in tablespoonful doses after meals, feeling sure it depended upon some reflex irritation of the spine to her semi-circular canals. The success of the treatment confirmed the diagnosis. The use of this drug entirely relieved the annoying symptoms after one month's treatment.

PULSATING NOISES, WITH VERTIGO.

Miss Maria C., the sister of a distinguished Western physician, was sent to the writer with a letter, in which he stated that his sister had a persistent discharge from the right ear, and was almost absolutely deaf in that ear. She was a teacher of music, and had to be much exposed out of doors during all kinds of weather. She was very intelligent and cultivated, and was a skilled musician, but was

* Aural Surgeon to Jefferson Medical College Hospital.

much more distressed about the discharge and odor, which was obvious in spite of her great care. She was also much annoyed by the peculiar pulsating noises in that ear, and the dizziness was also so severe at times that she was afraid of falling, and had to grasp at any object for support. She had been treated by various means, but without success. Having been very successful in my treatment with a nephew, she placed herself under my care, being ready to carry out my directions faithfully. After cleansing the ear, I found the membrana tympani perforated, the opening in the upper quadrant, but being entirely covered with polypoid granulations which extended from the perforation all the way forward, involving the upper wall of the bony meatus. After removing the posterior mass by several operations, by the wire snare, pressure was made by a probe, and it entered into a cloaca or opening of diseased bone, and this at once caused her a severe attack of vertigo, which lasted, even when the instrument was removed, for several seconds.

By the administration of large doses of quinine and hydrobromic acid, and now and then an anodyne on account of pain in the part, she was able to allow me gradually to remove all the diseased bone by scraping with a small sharp, spoonlike instrument. I then applied the actual cautery, and, lastly, a ball of fused nitrate of silver on an aluminium wire. After many months of treatment it filled up with healthy granulations, and closed. The discharge gradually diminished, and the perforations healed by the use of boracic acid and solution of boro-glyceride. Several relapses occurred, but now—June, 1885—she is well. She has been residing in the country, giving music lessons and doing Sunday-school work, and being out in all weather, has had no severe relapse.

SPASTIC CONTRACTION OF THE INTRINSIC MUSCLES OF THE EUSTACHIAN TUBE.

Mrs. William R. B., 25 years of age, a lady of wealth and cultivation, was sent by her physician, January 26, 1883, to me on account of annoying sounds in her ear (the right), which she described like the buzzing of a large fly, which she not only hears but her friends also. The hearing-distance is normal; tuning-fork heard in air; has never had any discharge from the ear, and has no pain, but the noises are distressing and disturbing; the membrana tympani of the left side normal; Eustachian tube open, but containing mucus; has had no vertigo; throat and tonsils divided

up into separate layers; sensitive mucous membrane, somewhat congested, and secreting an abundant tenacious mucus. The disease first noticed January 19, 1883; no hereditation; constitution delicate, not strong; has suffered from measles and scarlet fever.

In this case the crackling sound was caused by the clonic spasm, or irregular contraction of the muscles of the ear or Eustachian tube, which sounded like the irregular ticking of a watch a distance off. The sound could not be suppressed by any effort of the will. At every sound a corresponding contraction could be perceived in the velum palati. The noises would not stop when the velum palati was raised by an instrument.

Diagnosis.—Spastic contraction of the tensor tympani causing the noise in separating the mucus in the Eustachian tubes.

Treatment.—Having been under the care of two medical gentlemen,—one a general practitioner, and the other an ophthalmic surgeon, who had employed various internal remedies, also Politzer's air-douche, balm tranquille, etc.,—I directed inhalations of chloroform, and belladonna by the middle ear, to allay spasms, and valerianate of quinine and oleo-resin of cubebs to act upon the nervous system and mucous membrane and the Eustachian tube. I also employed the primary galvanic current in front of the ear and in the Eustachian tube by an intertympanic catheter, and this, together with the local application of a sol. argenti nitratis to the tonsil, diminished the sounds somewhat.

January 31. States she is a little better; the sounds come and go now; battery continued, also medicine.

February 7. Very much improved, but finds the medicine nauseates her. She was directed to reduce the dose. Continued the use of the battery, with the local application to the throat and near the Eustachian tubes of the fluid extract of hydrastis Canadensis by means of my Eustachian forceps.

February 15. Has had no return of noises since her last visit, but has had a distinct crackling noise different from the other, and only heard by herself, showing a change in the condition of the Eustachian tube and the muscular apparatus. She continued to improve, and finally the noises left her. I met her several times, and the cure remained permanent.

I have treated a number of these cases, and they may be arranged under two classes,—one in which the spasm is involuntary, and not controlled by the will of the patient, and

another class, of a true nervous or hysterical order, in which the patient is able to produce them at will, and can prevent them. The simple enlargement of the tonsils is not sufficient of itself to cause it, nor mucus in the Eustachian tube, else the cases would be more numerous. The reflex irritation is extended so as to cause spasm of the tensor tympani or stapedius; but the larger number of observers, of which I am one, believe that it also involves the palatine muscles, in which the anterior wall of the mouth of the Eustachian tube is suddenly drawn away from the posterior.

RHEUMATIC OTITIS MEDIA, WITH TINNITUS AURIUM.

Mrs. H. G., aged 55 years, February 19, 1883, applied to me for treatment. Both ears affected, caused by a fall two years before; hearing-distance normal; tuning-fork heard in air; no discharge; occasional pain in the left ear; a roaring sound in the right and a singing in the left; both membrana tympani slightly opaque, the left more than the right; Eustachian tubes open; vertigo on stooping down and rising; throat and tonsils irritable; no hereditation, and health and constitution good, but suffers from constipation. She was directed pilulæ hydr., gr. iii; ext. hyoscyami and colocyth. comp., aa gr. i. \mathfrak{w} . Ft. massa pilulæ No. 1. S. One pill at bedtime every night.

February 27. No improvement; most pain at night, and fulness over the liver and pain in the back of the head and in the chest; ordered sodii iodidi and bromidi, aa gr. i. Pulv. Sacch. alb., gr. i. \mathfrak{w} . Ft. pulv. in capsules. S. One three times a day. This treatment she continued for some months with entire relief from the noises.

This patient presented herself again February 20, 1885, with a relapse of almost all the symptoms. She had, besides, an ulcer in the meatus. This was treated by local applications and general treatment, as before. It was remarkable that she should have a return of the symptoms at the same time of the year two years after, showing that it was partly atmospheric.

March 3. Reports that she is very much better; the ulcer in the meatus almost well; continued the ointment of boro-glyceride, with powder of hydrochlorate of cocaine and gum arabic to the mouth of the Eustachian tube and relaxed naso-pharyngeal mucous membrane.

March 12. Still improving; has passed, by

the use of the pills, some ascarides lumbricoides, and, fearing that they may have given rise to irritation, she was directed $\frac{1}{2}$ -grain doses of santonine in lozenges three times a day before meals, to be followed, after the use of twelve, by a dose of castor oil and 20 drops of oil of turpentine.

March 24, 1884. Slight return of the noises, with pain in the nape of the neck. The ulcer in the meatus more irritated; made application to it, and sprayed the pharynx, and continued the pills and powder, which she had omitted.

May 23, 1885. Discharged well, and free from all noises.

January, 1886, and again February, the patient had had a slight return of the noises, owing to having undergone great fatigue, exposure, loss of rest, and mental depression in nursing her dying husband. The same treatment was instituted, and a more gradual improvement has taken place.

1502 WALNUT STREET, PHILADELPHIA,
February, 1886.

LAWS RELATING TO CEMETERIES AND BURIAL.

BY HENRY A. RILEY, ESQ., NEW YORK.

Places specially set apart for the sepulture of the dead have existed from the earliest times, and the tenure by which such property has been held to its original purpose is as strong and lasting as that by which any property is kept for a public use. The exact tenure under which cemeteries have an existence is regulated by certain general principles of the common law and by the special enactments of the various States. It will be the purpose in a series of articles to state these general principles, and also the laws of the different States where they are noteworthy.

The fact that cremation is coming into favor in this and other civilized countries will necessarily have some effect upon the application of existing laws, but it is not anticipated that much new legislation will be required. Some suggestions, however, in regard to the legal aspects of cremation will be presented later. The vast body of people in civilized countries are as yet firm believers in sepulture as contrasted with incineration or mummification, and the practice of the first mode of disposal of the dead is not likely to be seriously affected for many years to come by the influence of the advocates of cremation. It

will be convenient to treat of the general subject under the following divisions :

I. Origin and organization of cemeteries, public and private.

II. General principles of tenure of cemetery property. Ownership of the grounds, of individual loss, and restraints upon alienation.

III. Removal of the dead. Rights of cemetery authorities, relatives, and the public.

IV. Regulations and rights of access and ornamentation. Penalties for desecration.

V. Special laws of the various States relating to cemeteries and interments.

I. Origin and Organisation of Cemeteries.—

Burial-grounds, in the modern sense, had their origin soon after the recognition of the Christian religion by Constantine, when the then prevalent custom of incineration gave way to sepulture. The catacombs were used by the early Christians both as places of refuge from persecution and for sepulture, and when it became safe to inter the body in graves on the surface of the earth, instead of in subterranean excavations, the latter method gradually was discontinued.

It was not possible, however, for the places of burial to long continue without public recognition, and it seems certain that in many parts of Europe places for sepulture were set aside with solemn forms, either religious or legal. There is no evidence, however, during the first few centuries of the Christian era, that the grounds surrounding churches were used for interments. Still, this custom had become fixed in England prior to the year A.D. 750, for at that period Lord Stowell states that spaces of ground adjoining the churches were carefully enclosed, and solemnly consecrated and appropriated to the burial of those who had been entitled to attend divine service in those churches, and who now became entitled to render back unto those places their remnants to earth, the common mother of mankind, without payment for the ground which they were to occupy, or for the pious offices which solemnized the act of interment.

It appears, therefore, that in England burial-grounds were early established in connection with the parish churches, and this fact has controlled largely the decisions of the courts concerning them.

The whole matter of burial, what was termed the "right of Christian burial," the time and the place, were all under the control of the ecclesiastical courts.

A burial-ground unconnected with a church was an anomaly, and one not under control of the ecclesiastical courts was an impossibility.

This state of affairs existed until a comparatively recent time, and probably not a public corporation existed before this century for the purpose of affording a place for interment.

In this country we have followed the example of England as regards burial-places, the rites of interment being universally religious in the colonial times, and the ownership of the grounds being in the parish, town, or city.

The formation of large cemeteries unconnected with separate churches is a matter of very recent date, and is due largely to the increase of population and the absolute necessity of securing burial-places away from the centres of population.

The term cemetery now seems to be very largely applied to these independent organizations, which are either public or private.

If public, they may be owned by a church, by the town, or some corresponding political community, or by a corporation specially formed for the purpose. Private cemeteries are comparatively few. They are small, and are used only for the interment of persons belonging to a family, or a small number of families, or to an organization like a society. The great majority of cemeteries at this time are connected with churches, but the tendency now is in the opposite direction of corporate ownership, and in the large cities there is practically no opportunity for interment, except as afforded by these corporations.

In London the danger to the health of the teeming population led to a great deal of agitation on the subject long before the Burial Act of 1855 closed the church-yard cemeteries within the limits of the city to interments. Between the years 1840 and 1855 there had been frequent parliamentary inquiries, and a great mass of data accumulated, showing the harmful effect these interments had had upon the general health. A writer in the "Encyclopædia Britannica" says of the church, that "the vaults under the pavements and the small spaces of open ground around them were literally crammed with coffins. In many of the buildings the air was so tainted with the products of corruption as to be a direct and palpable source of disease and death to those who frequent them. In the church-yards, coffins were placed tier above tier in the ground, until they were within a few feet (or sometimes even a few inches) of the surface, and the level of the ground was often raised to that of the lower windows of the church. To make

room for fresh interments the sextons had recourse to the surreptitious removal of bones and partly-decayed remains, and in some cases the contents of the graves were systematically transferred to pits adjacent to the site, the grave-diggers appropriating the coffin-plates, handles, and nails, to be sold as waste metal. The daily papers of thirty years ago contain numerous records of scandals of this kind; while from the official reports it appears that the neighborhood of the churchyards was always unhealthy, the air being vitiated by the gaseous emanations from the graves, and the water, whenever it was obtained from wells, contained organic matter, the source of which could not be mistaken."

As a result of the Burial Act of 1855 interments are now forbidden within most of the cities and towns of Great Britain, and the organization of cemeteries for the burial of large numbers of people has become a necessity.

Prior to 1855 there had been cemeteries organized, but Kensal Green Cemetery, one of the best known of the London cemeteries, and the earliest of them all, was only established as late as 1832. There are now many cemeteries around London, and among them are the following: the Highgate, which commands a fine view of London; Abney Park, formerly the residence of Dr. Watts; the Norwood and Nunhead cemeteries, to the south of London; the West London at Brompton; and the great cemetery at Woking in Surrey, which is only accessible by railway.

Père la Chaise, the great cemetery near Paris, named from the well-known confessor of Louis XIV., who once owned the ground, was laid out as a cemetery in 1804.

In France, outside of Paris, there is a general law requiring every city and town to provide a burial-place beyond its limits, and directing that it shall be properly laid out, and planted and located if possible on rising ground. Interments are to be in separate graves. In Paris there is less regard for individual rights, and the poor are buried in large pits, forty and fifty at a time. They remain undisturbed for five years, and then the ground is smoothed over, a new layer of soil four or five feet thick is made, and the interments begin again.

The history of cemeteries in this country is very similar to that of England. They are very frequently connected with the churches, and this was at the outset the invariable rule.

They are now occasionally owned by the

town or village, and in that case are for the benefit of the whole population.

In other cases they are owned by private corporations, organized under general laws or by special charter.

Private cemeteries are occasionally found in the country for a single or for a few neighboring families, and the laws of some of the States make special reference to these small grounds devoted to a restricted use.

The oldest cemetery in the United States of any note is Mount Auburn, near Boston. It was established in 1831, the year before the formation of Kensal Green, the oldest English public cemetery.

Mount Auburn contains one hundred and twenty-five acres of land, and holds about twenty-five thousand bodies. Forest Hills is the largest cemetery in the neighborhood of Boston. It contains two hundred acres of land, and was established in 1848. Greenwood Cemetery, on the outskirts of the city of Brooklyn, is the largest New York cemetery, and contains four hundred and fifty acres. It was incorporated in 1838, but no interments were made until 1842. There have been within its limits about two hundred and twenty thousand interments. Woodlawn, on the Harlem Railroad, a few miles from New York City, has about four hundred acres of land, and dates from 1863. Some twenty thousand bodies have been interred there. Laurel Hill Cemetery is the best known of the Philadelphia cemeteries, and was laid out in 1836. It contains eighty acres of land on the banks of the Schuylkill River. In 1869 the corporation controlling this cemetery established the West Laurel Hill Cemetery, with two hundred acres of land. Alleghany Cemetery, situated near Pittsburg, is the largest cemetery in Pennsylvania. It dates from 1845, and contains three hundred and sixty acres of land, from many points of which beautiful views can be obtained of the Alleghany and Monongahela Rivers. Green Mount Cemetery is the principal Baltimore cemetery, and was dedicated in 1839. Oak Hill Cemetery is situated two miles from Washington, at Georgetown, D. C., and contains thirty-five acres. It is the best kept of the cemeteries near the national capital. It was established in 1849. Spring Grove Cemetery, near Cincinnati, is the largest cemetery in America. It was opened in 1845, and contains six hundred acres of land. It was laid out by John Notman, the designer of the Laurel Hill Cemetery at Philadelphia, and is very beautiful both from natural attractions and the adornments of art.

Among the other prominent cemeteries are Hollywood near Richmond; Magnolia at Charleston; Bonaventure at Savannah; Elmwood at Memphis; Cave Hill near Louisville; Belle Fontaine at St. Louis; Rose Hill and Oakwood at Chicago; Forest Home near Milwaukee; Lone Mountain at San Francisco. Mount Royal at Montreal, Mount Hermon at Quebec, are the principal Canadian cemeteries.

All of these cemeteries are dwarfed in comparison with the great national cemeteries for the dead soldiers of the civil war. These have been established by Congress, and number in all eighty-two. The following are the largest, and contain the most numerous interments: Andersonville, Ga., holding 13,714 bodies; Arlington, Va., 16,264; Chattanooga, Tenn., 12,962; Chalmette, La., 12,511; Fredricksburg, Va., 15,257; Memphis, Tenn., 13,977; Nashville, Tenn., 16,526; Salisbury, N. C., 12,126; Vicksburg, Miss., 16,600. The total number of interments in all these cemeteries is 321,369, including 173,088 known and 148,281 unknown persons.

The second article will treat of the tenure of cemetery grounds.

THE CURE OF FISTULÆ BY INJECTIONS OF OIL OF TURPENTINE.

Cases of anal fistula in connection with carious bone, fistula in connection with the teeth, fistula of the duct of Steno, and atonic fistulæ of various varieties have all been treated with good results by DR. S. CECCHINI by the injection of oil of turpentine (*Wiener Med. Blätter*, January 14, 1886). The reason for the employment of this drug is attributed by the author to the fact that oil of turpentine, on the one side, is a powerful stimulant to the formation of granulations, and, on the other hand, is an antiseptic; while when employed with ordinary care it can produce no unfavorable results. His results are based on a large number of cases, which are reported with very great care and accuracy, and in every appearance seem to warrant reliance on the author's statement. A permanent cure was stated to have been procured in a large number of cases. First, as regards anal fistula, he details seven cases of fistula in four individuals in whom the injection was repeated several times at intervals of three days. The author recommends the employment of syringes with blunt nozzles, then the closing of the opening of the fistula with the finger after the injection has been made, so as to insure

thorough contact. The pain produced is slight, and is quite bearable, although, if necessary, the oil of turpentine may be diluted with olive oil. In five cases the fistulæ were completely cured. In one the patient stopped the treatment before a perfect cure resulted, as he was satisfied with the improvement that followed. In another case of a complete sinuous fistula in a decrepid man considerable improvement was produced, and, after finally being operated upon, the fistula was cured. In cases of fistula in connection with carious bone, four cases are reported in which cure was completely produced in from two to three months. It is hardly necessary to analyze his other cases, except to add that in all a favorable result appears to have been obtained.

AN OVERDOSE OF VERATRUM VIRIDE.

DR. F. GREENWELL reports in the *Cincinnati Lancet and Clinic*, December 19, 1885, that he was called recently to see a woman who had taken a teaspoonful of a mixture consisting of oil of tar, tincture of veratrum viride, and simple syrup, each 2 drachms, which she had taken for asthma. Her breathing was greatly disturbed, she was gasping for breath, and complained of loss of vision, while the pulse was only 36 per minute. Thirty drops each of aromatic spirits of ammonia and Hoffmann's anodyne were given with 1 ounce of brandy, and this brought the pulse up somewhat, though in a few moments she began to complain of cramp and pains in the arm. One grain of opium was then given, followed by the brandy. The next day she had entirely recovered.

A NEW ANTISEPTIC.

CKIANDI BEY has published a number of communications on the bisulphide of carbon, which, contrary to the statements of chemists, he states to be soluble in water in the proportion of 1 part to 2000 of water. This weak solution, according to his observation, entirely prevents every fermentation, and therefore suggested itself to him as a good antiseptic. The author, in the *Centralbl. für Chirurgie*, December 12, 1885, highly recommends this solution in nearly all cases where a disinfectant is required. He has employed it in the treatment of diseases of the mouth and in suppuration with chronic inflammation of the mucous membrane. We have already referred to its use in typhoid fever in arresting the diarrhœa and disinfecting the stools.

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Leading Articles.

THE SUCCESS OF THE NEW TREATMENT OF DIPHTHERIA BY THE GALVANO-CAUTERY.

IN our last issue we directed the attention of our readers to the singular and noteworthy coincidence that simultaneously from two different quarters, but manifestly independently of each other, a method of treatment was proposed for diphtheria which was claimed to produce most satisfactory results, viz., the application of the galvano-cautery. We have repeatedly and forcibly emphasized our proneness towards pessimism regarding the countless panegyrics in the therapeutic field that have come to us lately from abroad; yet the claims of the above method of treatment seem to be based on some solid facts.

Medical literature informs us that the idea of employing the glowing iron as a radical cure for septic processes of mucous membranes is not a new one. An American ophthalmologist, Dr. Martinache, of San Francisco, appears to have been the first to practise this cauterization of mucous membranes. Later, Dr. Gayet, of Lyons, also an ophthalmologist, likewise adopted this treatment; and as early as 1857 the *Union Médicale* published favor-

able reports of the cauterization treatment in diphtheria. But the deficient understanding of the actual nature of the diphtheritic and other septic processes and primitive means of executing the cauterization naturally rendered all such attempts in those days little available. The merit of having revived the ancient practice, and of exhibiting the thermo-cauterization of the diphtheritic membrane in its most perfect imaginable form, viz., by the galvano-caustic loop, belongs to Dr. Bloebaum, of Koblenz (Rhenish Prussia). From various German journals, especially the *Deutsche Medizinische Zeitung* of January 18, 1886, we have gathered some reliable information regarding this vitally important topic, which we desire to present to our readers.

Bloebaum was for a year or two previous to the announcement of his cautery treatment of diphtheria engaged in experiments intended to elucidate the effect of the galvano-cautery in various septic, and especially diphtheritic, processes which were artificially produced for the purpose. He noted that on the cornea the galvanic cauterization behaved in no respect as an inflammatory irritant, but, on the contrary, proved a powerful stimulant to tissue-regeneration, and, last but not least, evinced perfect *antiseptic virtues*.

It was wonderful, says Bloebaum, to note how young diphtheritic pigeons, which were already cyanotic and unable to feed, after a single cauterization could on the following morning fly about and eat freely. In these young animals, in which the pharyngeal mucous and submucous tissues are of course much more delicate than in man, no inflammatory swelling of the cauterized parts and its surroundings could be detected; on the contrary, they looked healthier than before, and in a few days healed altogether. After sufficient and satisfactory observation on animals, Bloebaum proceeded to employ the galvano-cauterization in the treatment of diphtheria in man. From a number of successfully treated cases of diphtheria, Bloebaum details two in the quoted number of the *Deutsche Medizinische Zeitung*, which testify to the incredibly prompt effect of the cauterization. Besides gargles of ice-water, no other medicinal interference of any kind was admitted. Let us briefly review the first case, which our author reports with full names and dates.

On the 17th of the month the patient was driven to his house and presented for treatment. Profoundly ataxic form of diphtheria; patient unable to get in or out of the carriage unassisted; fever high; cervical glands swollen.

The patient was cauterized and seen by the doctor on the following morning, the 18th. The fever was found to have disappeared, the cervical glands to have almost wholly resumed their normal size, and the diphtheritic deposit to have almost entirely vanished. Only a few suspicious spots still were present, which were cauterized anew. On the 19th the patient failed to report at the physician's house, although ordered previously to do so. Called to the house, Bloebaum found his patient absolutely well, but was charged to treat other members of the same family, who had likewise contracted diphtheria. The same treatment proved the same prompt success in these and other instances as in the case detailed above. Bloebaum asserts that the procedure appears wholly painless, as no expression of pain was ever uttered during the cauterization, although the intense burn-odor suggested the thoroughness of the act. Healthy granulations were in every instance noted to have sprung up from the cauterized part.

Reviewing these apparently reliable statements of Dr. Bloebaum, we can readily single out the rare advantages of the cauterization treatment of diphtheria, and formulate our conclusions as follows:

1. The galvano-cauterization of the diphtheritic membrane produces no pain, or only a minimal one.
2. The thoroughly cauterized part is rendered absolutely sterile, and forbids the development of microbic life.
3. Fever disappears soon after the cauterization.
4. No inflammatory secondary effects set in.
5. Every physician is able to execute the cauterization, even without an assistant.*
6. No constitutional medicinal treatment is needed in addition to the cauterization.
7. Though the statistics of diphtheria cases thus treated are of course yet very limited, the thousands of ulcers of the cornea treated and cured in the same manner allow of very favorable prospects regarding the treatment of diphtheria with the galvanic cautery.

Concerning the latter proposition, a few additional thoughts suggest themselves, as the deductions from this analogy might not appear evident at first sight. But nobody will object to our assertion that all microbes, no matter whether they belong to the cholera, tubercle, or syphilis bacilli, or the pathogenetic

agents of diphtheria, are killed by fire, and that a soil treated by fire can give no nourishment whatever to such microbes as perhaps have escaped death by fire. Of course, we need not wonder at the imperfect results obtained with the intended cauterization of septic or diphtheritic membranes by the old physicians, as intimated above.

But a cauterization in its present perfect form insures an ideal *antiseptic* effect, and in our estimation is destined to supersede in the treatment of diphtheria every other therapeutic procedure; *provided, what is affirmed about the method shall be substantiated upon wider experience.*

In the rapid and certain destruction of the septic agents and products, in its local and distinctly circumscribed effect, in the ease and harmlessness of its application,—viewed from all sides,—the galvano-caustic treatment of diphtheria recommends itself warmly to every practitioner who has hitherto felt his helplessness against one of the most ravaging of all known diseases. It must be, therefore, henceforth our aim in the treatment of diphtheria to change the infectious character of the affection into a traumatic one, and to thus obtain not only the most favorable conditions for tissue-regeneration, but also to prevent by the destruction of the pathogenetic parasites their entrance into the circulation, the subsequent constitutional intoxication, and, lastly, the sequelæ of the affection.

HYPNOTICS AND HYPNONE.

IN no branch of therapeutics is the search being prosecuted with more eagerness than among hypnotics. But we cannot say that at present there are more than three substances which can be relied upon as having distinctly established themselves in the favor of the profession. One is the old stand-by opium, the second is chloral, and the third is hyoscine. To this perhaps should be added a fourth remedy,—paraldehyde. The general action of opium as a hypnotic is so well known by every one that it is a waste of words to say much about it, but perhaps we may be pardoned for calling attention to the fact that when the insomnia is produced by pain this drug remains still *facile princeps*. When, however, the case is one of pure insomnia, opium is, in our experience, distinctly inferior to chloral. Chloral does not relieve pain, although it may force sleep. Experiments show that the rabbit under its influence, if the dose has not been too large, is absolutely hyperæ-

* Dr. Bloebaum has constructed an especial pharyngeal mirror for the purpose, which, with a transportable apparatus, is sold by Eschbaum in Bonn (Prussia).

thetic, though when left alone it sleeps quietly. We have often heard neuralgic patients violently affirm that they would never again take chloral, because the sleep was accompanied by frightful dreams of agonized suffering,—a sleep built upon an under-foundation of pain. In very many cases the combination of chloral and morphine acts much better than does either remedy, producing sleep more certainly and with less disturbance of the digestion, and less after-depression. Fifteen grains of chloral, with a quarter of a grain of morphine, will almost always triumph, and in mild cases ten grains and an eighth are sufficient.

A very important fact to be borne in mind in regard to persons in whom the after-depression from opium is excessive is, that this after-effect can be largely prevented by using the deodorized tincture of opium, and administering with it a full dose of the bromide of potassium. How the bromide acts under these circumstances we do not know, but that it does act is certain. Perhaps in three-fourths of the cases it renders the opiate tolerable to the system of the person who otherwise could not endure it.

Hyoscine was practically introduced to the profession through our columns, and we have therefore watched it make its way with considerable interest. It seems to be clearly proven that it is a most invaluable remedy, finding especial application to those cases of insomnia in which the sleeplessness is the result of excited brain action. Whether this excitation passes beyond the lines of sanity, or simply reaches the condition in which a perpetual tumult of thoughts and ideas crowd away sleep, hyoscine is of equal service. In very many of these cases opium in less than immoderate dose produces absolute wakefulness. There is one possible application of hyoscine which has not yet, as far as we know, been made, and in which we are very anxious to see the alkaloid tested; namely, the delirium of low fevers. As we have before stated, when there is any difficulty about the throat and larynx, the drug should not be used; but in the low delirium of typhoid and other allied fevers, hyoscine ought to produce quiet sleep without injury.

With paraldehyde we have had a very small amount of experience, but as a simple soporific it does seem to have some power, and is probably similar in its action on the cerebrum to chloral, but much inferior to that drug.

The latest candidate for popular favor is the so-called hypnone. This substance is soluble in water, has a horrible taste, recall-

ing that of creasote, and can only be properly administered in gelatin capsules or pearls. It is also violently irritant, and, being soluble in oil, it may be given in it. The most recent researches with this substance, however, throw very grave doubt upon its practical value. It undoubtedly will produce in the lower animals and in man, given in sufficient doses, profound sleep. In toxic amounts it causes insensibility and asphyxia, preceded often by hæmaturia.

In the report recently presented to the Academy of Sciences by Messrs. Mairet and Combemale (*Comptes Rend.*, ci. 1506; cii. 178) it is stated that in experimenting with four different samples presenting the characters attributed to acetophenone, or hypnone, obtained from different houses of good repute, they found that its immediate effects upon animals had nothing in common with sleep. Administered in therapeutic doses to a healthy man and to twenty-one patients suffering from mental affections, in only one case was sleep produced; in none of the others did it exercise any hypnotic action. So negative were these results that the reporters suspected whether they had been using true hypnone. Therefore, following Friedel's process for the preparation of 'acetophenone, a mixture of acetate and benzoate of lime was submitted to dry distillation. Upon heating the mixture over a bare fire, a brownish liquid distilled over, having the odor of bitter almonds, and not crystallizing at 0° C. like acetophenone. Intravenous and hypodermic injections of this liquid produced in animals results similar to those obtained with acetophenone, but of greater intensity. In one case an intravenous injection produced syncope, and afterwards vomitings, alternating with profound sleep for upwards of six hours, the animal dying two days afterwards. When the mixture was heated gradually, a heavy yellow oily liquid passed over, having an odor recalling that of acetophenone, but not crystallizing at 0° C. This liquid also produced symptoms similar to those produced by acetophenone, but in much smaller doses.

Hopeine is the narcotic alkaloid of American hops isolated from all extractive matters, and has hitherto been but little used, though it is said to be a powerful and pure hypnotic. In England, Williamson, Smith, and Roberts have examined the physiological action and gauged the therapeutic efficacy of the drug. All three observers unite in regarding the new hypnotic favorably. In the *Wiener Mediz. Presse* of January 31, we also note that Dr. Lang, of Vienna, has tried a

limited sample of hopeïne, which was forwarded to him from London. It is, according to Lang's sample, a white powder of an exceedingly bitter taste, and insoluble in water. Lang reports the results of his trials with the drug in a few cases of phthisis pulmonalis and idiopathic insomnia. In a phthisical woman, who for an entire week had taken every night fifteen grains of urethan without effect, a dose of $\frac{3}{16}$ gr. of hopeïne sufficed to produce a sleep lasting for five hours, and being but once interrupted by coughing. The same small dose produced also in other phthisical patients a sleep of four; five, and six hours' duration without any considerable interruption through coughing.

It is asserted that hopeïne-salicylate is a very eligible preparation; it comes, dissolved in "condensed beer," in small vials, containing each 12 c.c. (1 c.c. (16 gtt.) of the solution corresponding to $\frac{1}{16}$ gr. of hopeïne), and is given in a dose of 20 to 40 drops. It is likewise a very active hypnotic. In children having measles or chicken-pox Lang succeeded repeatedly in producing an otherwise unattainable sleep of four to eight hours' duration by 4 to 8 drops of this medicine. Subcutaneously the muriate of hopeïne can be employed in a watery solution, and in Lang's hands has never failed to act promptly, and to be exempt from all secondary untoward effects. Lang does not hesitate to rank hopeïne among the best of our hypnotics in view of its promptness and innocuousness. In connection with this subject it should, however, be stated that, according to Bardet, Pettit, and Dujardin-Beaumez, hopeïne is identical with morphine, and this statement is so made as to leave the inference that hopeïne is simply morphine under another name. In our next issue we may possibly have some further information on this subject to lay before our readers.

The same pharmacologist reports in the *Wiener Medizinische Presse* of February 7, 1886, on another supposed hypnotic, viz., the glucoside of boldo. There appears to be but little known about this drug. In the *THERAPEUTIC GAZETTE* of May, 1885 (p. 500), we find it mentioned as a substitute for cocaine, and the statement that as such it had been used successfully on the cornea by Laborde. According to Lang, it is a yellowish-white powder, which produces, when placed on the tongue, a pricking and slightly burning sensation. It is affirmed to be a hypnotic, and to cure liver-affections and catarrhs of the bladder. Lang tried boldo in a vesicular catarrh resulting from a gonorrhœa, and with

a perfect failure; neither pain nor dysuria were relieved in the slightest by the drug. Lang leaves the merit of disproving the hypnotic virtues of boldo to another ambitious experimenter.

IDIOSYNCRASIES.

THERE are probably very few physicians who have not from time to time been seriously annoyed by the idiosyncrasies of people in regard to drugs. These idiosyncrasies are without reason that can be discovered, and cannot be allowed for by any *a priori* judgment. Perhaps one of the most serious is the case of susceptibility to the action of mercurials which some people possess. We have seen a fraction of a grain of calomel cause a most frightful and really serious salivation. A very curious circumstance which we have noticed in one or two such cases is that blue mass was tolerated when the systems exhibited the most violent reaction against calomel.

There is a very well-known practitioner in Philadelphia who is most violently affected by the odor of hyacinths. We have known a single sprig of hyacinth, put in his room without his knowledge, to cause in a few moments sick stomach, followed by violent, repeated retching, and great general depression, amounting almost to syncope. It would appear as though, if he were shut up in the room with a single hyacinth bulb in full bloom, it would cause his death. A curious feature of this case is, that the emanations will produce so much disturbance of his system without his perceiving the odor.

Another very curious idiosyncrasy that has come under our notice is in a lady who is thrown into fainting fits by eating the smallest piece of butter. We have known her tried by those who thought her condition was purely imaginative by placing a small piece of butter in a dish of mashed potatoes and giving her a tablespoonful, after telling her that there was no butter in it. In a very few minutes she fell off her chair in a condition of swooning.

Some years ago one of the residents of the Pennsylvania Hospital was forced to resign because the moment he went to work in the surgical wards he became afflicted with a crop of boils which would have disrupted the heart of Job with envy. It was only years afterwards that the unfortunate doctor discovered that the boils were produced by the emanations of turpentine, which was, at that time, used in the wards for cleaning off the skin of

patients to which the adhesive plaster had remained.

Not long since there came into our office a gentleman to whom morphine was given for the purpose of relieving pain. Contrary to all expectations, a violent diarrhoea was produced by the alkaloid; indeed, so excessive was the flux that it was stopped with difficulty. In this case the idiosyncrasy appears to have been inherited, as the father of the patient was accustomed to use habitually paregoric as a laxative; a teaspoonful of this fluid taken at night would always produce soft evacuations in the morning.

As already stated, there is no way of foreseeing these peculiarities. It ought, therefore, to be the habitual practice on the part of the physician, when prescribing for a patient with whom he has not before been acquainted, to ask as to the existence of any such peculiarities, and to pay attention to the answers received.

THE PROPHYLACTIC TREATMENT OF PUERPERAL ECLAMPSIA BY HOT- WATER BATHS.

THERAPEUTICS owes much to the Medical School of Vienna. Oppolzer, Skoda, and their successors have made many valuable contributions to the world's stock of knowledge of the means of modifying morbid processes. If there is one characteristic of these additions to therapeutical lore more marked than another, it is their thorough reliability. Methods for the modification of diseased action are usually tested on a large number of cases through a considerable period of time by competent observers. The *rationale* of the physiological action of a sanatory procedure is determined as far as possible, and its limitations approximately settled. Only then does the ambitious therapist announce his results to the professional public.

An example of the truth of this statement is presented in the prophylactic treatment of eclampsia in the pregnant, parturient, and puerperal woman by hot-water baths. It may not be amiss to say, right here, that in Vienna eclampsia, occurring during pregnancy, parturition, or the puerperium, is invariably regarded as a symptom of acute renal insufficiency.

The preventive treatment of the convulsive disorders of Bright's disease by hot-water baths—a very ancient method—is fully recognized in the *Allgemeines Krankenhaus*, but its greatest technical perfection, particularly as applied

to women during the period of reproduction, is observed in the obstetrical clinics of Professors Carl and Gustav Braun. Breus, formerly assistant to Gustav Braun ("Zur Therapie der puerperalen Eclampsie," *Arch. f. Gynak.*, xix. p. 219), has clearly described the plan pursued in the wards already mentioned. The patient, perfectly naked, is immersed up to the neck in a portable bath of a temperature of about 102° F. The tub is covered with heavy woollen blankets, which permit the head to protrude. The temperature of the water is then gradually elevated to 110° or 112° F. An ice-bag or a linen cloth, wrung out of cold water, applied to the head relieves the distressing cephalic symptoms which are occasionally observed at this time. Thirst is satisfied and diuresis promoted by the copious imbibition of water. The patient is allowed to remain in the hot-water bath about thirty minutes. She is then removed, wrapped in hot sheets, and put to bed between two layers of heavy woollen blankets, and covered in so that only the face is visible. Profuse perspiration soon begins, and is kept up for two or three hours. After this vigorous sweating the patient frequently falls into a refreshing slumber. If she feels faint in the bath or bed, a glassful of one of the light native wines usually restores the circulatory equilibrium. Great care is taken in the gradual cooling off of the surfaces when the woman rises from the bed. According to the indications in the concrete case, the baths are repeated from once to twice daily for an indefinite period of time. Under this simple mode of treatment wonderful results are frequently noted. The troublesome headache is relieved, dropsical effusions abate, and the amount of albumen in the urine is diminished.

The query as to the effect of hot-water baths on uterine contraction naturally arises. Hot-water sitz-baths have been employed for years in all the Vienna obstetrical clinics as a simple and innocent means of stimulating uterine contractions in tardy labors. On *a priori* grounds, it would seem in a high degree probable that the calling of *all* the skin reflexes into functional activity should result in the invocation of uterine contractions. Breus has not been able to observe any such effect; but then, as remarked by Sippel, chloral was exhibited *per rectum* in the cases observed before the bath was taken.

A. Sippel ("Die wehenerregende Wirkung heisser Vollbäder," *Centralblatt f. Gynäkologie*, No. 44, October 31, 1885) has recently

called attention to this important subject. In two cases of severe Bright's disease in pregnancy, with threatening eclampsia, premature labor followed the hot-water bath and diaphoresis within fourteen and one and one-half hours respectively. The first case, primipara, 24 years old, was in the thirty-second week of pregnancy; the second case, multipara, 27 years old, was in the thirty-fifth week.

To determine the effect of hot-water baths on the normal pregnant woman, Sippel selected a woman pregnant in the thirty-fourth week. She had a generally-contracted pelvis, and the induction of premature labor was indicated. After baths on two successive days (without the subsequent packing in bed), sensible uterine contractions occurred, but gradually passed away. On the third morning the same patient was placed in the hot-water bath; pains were complained of while she was in the water, and labor terminated normally some twenty-four hours later. The writer has recently observed the induction of premature labor to follow the hot-water bath in two cases of Bright's disease in pregnancy, with threatened eclampsia.

The possibility of the induction of premature labor under these conditions, however, is seldom a contraindication to the employment of the hot-water bath. The evacuation of the uterine contents, in the very large majority of cases, is an event for which the clinician most devoutly prays. To obstetricians who accept Robert Barnes's very advanced views, this possibility constitutes absolutely no contraindication. That distinguished obstetrician, at a recent meeting of the British Gynæcological Society, uttered words to the effect that "the necessity for inducing labor" was imperative "as soon as albuminuria was fairly established." (*The British Gynæcological Journal*, Part III., November, 1885, page 313.)

As a method of induction of premature labor, the hot-water bath is entirely devoid of danger from sepsis. Further trial, however, is necessary to determine its efficiency.

A FRENCH MËNU.

THERE is an old saying that he who makes two blades of grass grow where only one grew before is the greatest of human benefactors; and we suppose that he who makes two pounds of flesh where there had been but one is even superior to the man of grass. On this principle M. E. Decroix, one of the superior veterinary officers of the French army, is

worthy of all commendation. During the bitter scenes of Crimean and Algerian warfare, and especially in the frightful expedition of Maroc in 1859, Decroix was much impressed by the fact that whilst the soldiers were starving for want of food, horses killed in battle were rotting by hundreds on the plain and in the mountain. Remembering, also, that in 1850 Geoffrey Saint-Hilaire had shown that the French production of cattle was only sufficient to supply one-third of the population fully with animal food, Decroix came to the conclusion to experimentally determine whether the horse was or was not a good human food. As the result of his labors, and of the venturesome toil of others whom he had imbued with his own spirit, horse-meat was proven to be wholesome and good for food, so that when the siege of Paris brought hunger and famine into every faubourg, the eating of horses became a fashion. The result is that in 1884, in Paris and its environs, 14,548 horses, 346 donkeys, and 32 mules were converted into the æsthetic flesh of Frenchmen. Pushing his researches, Decroix has shown that the flesh of a horse dead of acute diseases is, when properly prepared, thoroughly wholesome. He has fed upon the flesh of beasts dead of pneumonia, of strangulated hernia, of hydrothorax, cerebral concussion, colic, purulent pyæmia from chronic inflammation of the joints, typhoid pleuro-pneumonia, and even of glanders acute and chronic. Surely the courage and the devotion which would lead a man to such lengths is worthy of the Iron Cross.

The naïveté which this Frenchman still retains in his old age is remarkable, and we read with much enjoyment how the "*bistek*" prepared from a horse dead from acute glanders had a taste *sui generis*, which was attributed to the free administration of alcohol to the unfortunate beast. If any of our readers want to study how to prepare soup from glandered horses, and the peculiarities which it possesses, we refer them to the recent memoir which Decroix has presented to the Academy of Medicine.

The results obtained by M. Decroix led him to the conclusion that the meat which is condemned by the Paris slaughter-houses and by the government inspectors might very well be employed for feeding the poor; therefore is it that he has fed upon animals dead of cancer, of phthisis, of fever, of unknown diseases, of pyæmia, and even with great labor he squeezed out, from the reluctant dugs of a cow in the death agonies from contagious typhoid, a

little milk, which he drank without suffering. Chickens dead of cholera, pigs dead of the various diseases to which hog flesh is heir, came not amiss to our experimenter; but at last he reached even his limit, and when, on the 25th of November, 1863, he ate the raw flesh of a dog dead of hydrophobia, he confesses that it was "*malgré une grande répugnance*," and that the taste did not altogether please him.

ON MILK-WINE (KEFIR).

IN two previous issues of the GAZETTE (March and April) we have referred to the high dietetic and even therapeutic value of the various fermentation products of milk, and expressed the hope that these preparations would become as popular in our sick-rooms as they are abroad. The necessity of importing the kefir ferment from Russia, however, has no doubt impeded hitherto the introduction of this variety of koumiss to a large extent; and if we at present suggest an easy and ever-ready way of procuring an identical ferment in every household, we hope to have enhanced the chances of recovery for a class of affections in which the power of drugs is, unfortunately, restricted.

In the liquid which is obtained during and after the preparation of butter,—the so-called buttermilk (also in cream which has become distinctly sour),—we have a ferment which for all practical purposes is stated to be identical with the kefir ferment, and can be utilized for the preparation of beverages containing all the nutritive and stimulant virtues of koumiss. According to a recently published instruction of Dr. Rogelmann, of Graz (Austria), in the *Deutsche Medicinal Zeitung* of January 14, 1886, one volume of buttermilk is to be mixed with one to two volumes of sweet milk, poured in a bottle, and allowed to stand. In three hours active fermentation will set in, which in about three days will be at an end. The product is a fluid smelling like wine, and containing alcohol, carbonic acid, lactic acid, and caseine. The following precautions are to be observed in this in every way simple and inexpensive procedure. The sweet milk used ought not to be wholly freed from the cream, and the bottles ought to be of a size that the milk fills only two-thirds of them. The fermenting milk is to be shaken daily vigorously (about three or four times), during which manipulation a cork is placed firmly in the bottle, but removed after the shaking in order to allow the carbonic acid to escape.

The opened bottle is to be placed in a horizontal position at least twice daily for a period of ten minutes, in order to let fresh air take the place of carbonic acid, and to thus prevent the stoppage of fermentation. If a very effervescent liquid be desired, the bottles are toward the close of the fermentation process allowed to stand continuously in a perpendicular position. In order to obtain new quantities of this "milk-wine," we add to a certain quantity of sweet milk one-fifth its volume of milk thus fermented, and are so able to continue this production *ad libitum*. The most favorable temperature for the preparation of this milk-wine is 15° (C.).

ON THE CONTAGIOUSNESS OF PAROTITIS.

THE number of constitutional affections in which hitherto no microbes of a supposed pathogenetic nature have been found is rapidly decreasing, and we have to announce parotitis as the latest addition to the list, as appears from a paper of Dr. Olivier, published in the *Revue Mensuelle des Maladies de l'Enfance* (*Deutsche Med. Zeit.*, January 23, 1886).

Our author found in the blood, saliva, and urine of parotitic patients cocci partly isolated partly as duplicocci, or united in chains and heaps; he also noted small bacilli, which he believed to be identical with those described by Capitan and Charrin. These bacilli showed mostly a spontaneous motility, and could be colored in gentian-violet, while the cocci remained uncolored by this fluid. The pathogenetic nature of these microbes is best illustrated by the fact of their disappearance from the economy during convalescence. In the saliva of healthy children are likewise to be found micrococci, but they differ from those found during parotitis by being easily colored in gentian-violet. Olivier explains the metastatic phenomena in mammæ and testes often observed during parotitis by the immigration of the specific microbes into these glands. In children in whom the poorly-developed genital organs possess but little blood, these metastatic processes occur almost never.

VIVISECTION VERSUS FEMININE VANITY.

AT the recent meeting of the Society for the Restriction of Vivisection in Philadelphia it was stated that the doctors were in disagreement about this matter. In conse-

quence of this, the subject was made a special order of business at a late meeting of the College of Physicians, and was fully announced. The result was that, after prolonged discussion, by vote of sixty to one, the resolutions were passed, and a county committee of five, with power to represent the college in opposing any attempts to procure new laws upon this subject, declaring that no further legislation on the subject of vivisection is desirable in Pennsylvania. This, of course, settles the question as to what is the opinion of the profession on the subject in Philadelphia, and the power of the profession is so great that we supposed it practically settles, at least for years to come, the question as to the enacting of any more laws.

Contrasting with the enormous amount of fuss which is made over this subject in proportion to the extremely small amount of pain that is inflicted is the destruction of our native birds, as set forth in a late number of that very valuable and interesting journal, *Science*. There are about four or five places in Pennsylvania where vivisection is performed to a very limited extent, and only for a portion of the year. To regulate this, in the last few years many thousand dollars have been spent and many hours of time wasted on the part of the enthusiasts who have devoted themselves to the subject. Whilst this has been going on, our sea-coasts, forests, mountains, and dales are being rapidly depopulated in the most cruel manner in order that the bonnets of women may be properly ornamented. It is estimated that there are in the United States about ten million persons wearing birds as personal ornaments. If it be considered that the life of a bird-skin in a bonnet is two years, and that the average for each wearer is one bird, to meet this demand five million birds must be annually killed. One bird to each hat is not an over-average, as frequently eight, ten, and twelve birds' heads can be found on one bonnet, and no allowance is made in the estimate for the amount of feathers and bird-skins used in ornamenting dresses and houses. Of course, a large proportion of this five million of birds comes from abroad. But, on the other hand, enormous amounts of bird-skins are exported. It seems that in the neighborhood of Cobb's Island, on the coast of Virginia, last year one enterprising woman secured forty thousand bird-skins, which she shipped to Paris. The result is that upon Cobb's Island the air is untroubled longer with terns and sea-gulls. Cape Cod has been made a similar desert.

Forty thousand terns were killed there in a single season, under the auspices of one person, for the hatting trade. The heronry of Florida have been decimated, and the whole Gulf coast almost stripped of its avian inhabitants. It is not merely the sea-gulls and similar birds against whom this war has been waged, but even the smallest winged inhabitants of the interior must suffer. The slaughter, of course, is greatest in the neighborhood of the large cities, and seventy thousand birds, it is said, were supplied to the New York dealers on Long Island in the year 1884. A New York taxidermist said recently that he had in his store thirty thousand crows, red-winged blackbirds, and snow-birds from the State of New Jersey. In a single auction-store in London during the months ending with April, 1885, about eight hundred thousand bird-skins were sold under the hammer.

Without occupying further space, we think we have said enough to show the enormous scale upon which this slaughter is going on. For every bird obtained in condition suitable for taxidermists, at least one other bird is too much mutilated for use, or escapes in a wounded condition to die. When it is remembered that these birds are all killed by shooting, and that only a small proportion of them are destroyed outright; that they are torn, disembowelled, and wounded in every possible way; that many of them live on, some for minutes, others for hours and even for days, it can be seen that the sum total slain thus produced is something really gigantic, and perhaps no sight was ever witnessed showing more completely the utter and unreasonable folly of ordinary human nature than the dancing plumes of the women at the meeting of the Antivivisection Society as the souls of the wearers were harrowed over the few dozen cats, rabbits, and dogs that had during the past year suffered for the benefit of medical science.

Reports on Therapeutic Progress.

PERMANGANATE OF POTASSIUM IN THE TREATMENT OF AMENORRHOEA.

DR. FORDYCE BARKER, writing in the *New York Med. Journ.*, February 27, 1886, states that he had long been incredulous as to whether any article known to the *materia medica* could be regarded as possessing the property of a direct emmenagogue. Of course,

he had, in common with other physicians, had his full share of experience in the use, for this purpose of iron, aloes, myrrh, savine, rue, and other agents, and had often seen menstruation return apparently as a consequence; but he had never been convinced that this result was due to the direct influence of the drug on the uterus or its functions. Latterly he had obtained special success in the use of capsules of apiol two or three times a day, commencing three days before the menstrual period. For the past four years, however, he has used the permanganate of potassium exclusively when an emmenagogue was indicated, except in a limited class of cases of sudden suppression. Dr. Barker divides the cases which he treated with this remedy into three groups, mentioning them in the order of their frequency:

First.—Young ladies between the ages of fourteen and nineteen, who come from the country "to finish their education." Homesickness, entire change of their habits of life and associations, over-tax of their brain-power from their own or their teachers' ambition to accomplish more in a given time than they ought to attempt, not infrequently lead to an arrest of menstruation.

Second.—Ladies, both young and married, who suffer severely from sea-sickness, that have left some European port within a few days of the menstrual period. With such, amenorrhœa of longer or shorter duration is almost sure to follow.

Third.—Ladies between thirty and forty, generally married, some of whom have borne children, who rapidly begin to gain flesh, grow stout, while at the same time menstruation decreases in both duration and quantity, until at last it is only a mere pretence. This is generally attended with annoying nerve-disturbances, pelvic weight, sometimes hemorrhoids, and often mental depression from the apprehension of growing old prematurely.

Dr. Barker affirms that when in either of these classes of cases he has prescribed the permanganate of potassium he has never known it to fail, but he adds that the use of the medicine should, if necessary, be continued for at least three months. Of course, Dr. Barker does not prescribe this agent in cases where the amenorrhœa is due to some grave constitutional disease, nor does he rely on it for the relief of sudden suppression due to cold, moral shock, and in acute disease. In such cases he thinks the pulsatilla, opiates, and local agents, such as fomentations and hot rectal enemas, are generally successful.

The above paper of Dr. Barker was called

forth by an address on the same subject read by DR. BILLINGTON before the meeting of the New York Academy of Medicine, held February 17, 1886. Dr. Billington first showed the importance of the subject by a reference to the sixty-nine cases reported by Ringer and Murrell, and quoted their conclusions regarding the class of cases in which the drug was useful. Since Ringer and Murrell's article appeared the remedy had been employed by many other physicians, both abroad and in America, and the results had been tolerably uniform. The author's experience had been limited to four cases; but these, taken in connection with those reported by Ringer and other authors, possessed some significance. In the first case the patient was eighteen years old, chlorotic, and suffering from malarial poisoning. For the nine months that she was under observation she menstruated only once, and then just after the administration of permanganate of potassium. She positively refused, however, to continue the medicine because of the gastric disturbance which it caused. The second case was that of a girl of seventeen, who had menstruated regularly until a certain exposure to the rain, when the flow became scanty and almost colorless; her health then declined, and she suffered from headache, coldness of the extremities, pallor, etc. Besides other remedies, she was given permanganate of potassium in 2-grain capsules three times a day, but they were discontinued for a time on account of gastric irritability. Before the next period, the condition of the stomach having been improved, she was able to resume the capsules, when she menstruated normally, and rapidly regained perfect health. The third case was that of a girl of about eighteen, who had menstruated regularly, but, without known cause, had ceased to menstruate, and become chlorotic and feeble. Other remedies having failed to restore the menses, permanganate of potassium succeeded. On one or two occasions, however, while the remedy was being continued, a period passed without any flow, probably because such large doses were not given as were said to be necessary in some cases. In the fourth case the patient, who was sixteen years old, had begun to menstruate a year before. The flow had appeared only four or five times, and she had palpitation and shortness of breath. She began with 2-grain capsules of permanganate of potassium three times a day; and during the night of the first day, when she had taken three capsules, the flow came on. This patient also

complained after taking the medicine of an unnatural sensation under the upper part of the sternum.

With regard to the manner in which the remedy acted, different views were held. The author agreed with those who did not believe the beneficial effect was due to its improving the blood and anæmic state; some patients so benefited were not anæmic, but, on the contrary, were plethoric. There were also conflicting views as to whether permanganate of potassium or other forms of manganese acted as general blood-restoratives. Ringer denied it; others held an affirmative view. Regarding the question whether binoxide of manganese was equally efficient as an emmenagogue as permanganate of potassium, the published testimony was not abundant; but Ringer and Murrell thought it was, while Dr. T. Gaillard Thomas considered it equally efficient and much better tolerated by the stomach.

Regarding the method of administration, it had been seen that permanganate of potassium often produced severe gastric disturbance, and some preparations were more likely to produce this result than others. The author preferred to give it in capsules. Its use should be begun a week before the expected menstruation, and, if it acted favorably, might be continued during the interval, or be suspended and resumed at a corresponding period the next month.

DR. THOMAS wrote that he had used both permanganate of potassium and binoxide of manganese frequently in disordered menstrual function. He preferred the binoxide. He had also employed it in chlorosis and anæmia, and had obtained better results than he had heretofore obtained with iron. While he recognized the fact that all medicines which were intended to regulate the menstrual function were uncertain, still he looked upon the preparations of manganese for use in such cases as valuable additions to the Pharmacopœia.

DR. C. C. LEE had used permanganate of potassium with two classes of patients designated by Dr. Barker, namely, young girls who, from habits of indolence or want of hygienic care, had ceased to menstruate, and women who had ceased to menstruate after a sea-voyage. He had given it in different forms, and had found trouble in getting patients to take it on account of gastric disturbance. Latterly he had employed mucilage as a vehicle, and in this form the drug had not produced gastric irritation. He did not think it was of much practical use as an emmena-

gogue outside of a certain range. In cases of chlorosis in which the menses seemed to be suppressed for want of vitality, permanganate of potassium was of temporary benefit. But even in this class of cases, if it was necessary to keep up its administration for four or five months, it would then be found, on suspending its use, that the result was not permanent. He had, therefore, come to rely upon it with less confidence than he inferred Dr. Billington did, and he now combined its use with that of other measures, such as massage, hygienic care, and the use of chlorate of potassium. His experience with the drug, however, had been limited to ten or twelve cases. He had never used it for metrorrhagia or menorrhagia, nor could he comprehend how a remedy which could be understood to be only a stimulant to the general nervous system through the oxygen which it imparted to the blood should be of benefit in these conditions.

DR. W. H. THOMSON said that about fifteen years ago permanganate of potassium was recommended in an article in the *Boston Medical and Surgical Journal* for cases of nervous exhaustion, to be administered in about $\frac{1}{4}$ -grain doses, larger doses, it was stated, causing gastritis and symptoms of poisoning. He employed it in such cases with negative results. He had previously, and again subsequently, employed syrup of iodide of iron and manganese in chlorosis, but the taste of that preparation was extremely disagreeable, and it was with great difficulty that patients could be induced to take it. Since reading Ringer's article, and a subsequent article by Bartholow, he had given permanganate of potassium in three different affections, administering it in 2-grain doses; but in all the gastric distress had been so great that a fair trial could not be made, and he therefore had no favorable results to report. His own belief was that the action of the drug was specific or special; that it did not act as a general restorative, although manganese existed in minute quantity in the human body. How manganese operated was to him a chemical mystery. He could not understand how Dr. Lee could get its action if he administered it in mucilage, for its reduction in the presence of liquids containing organic matter was almost immediate.

HYOSCINE HYDROBROMATE AS A HYPNOTIC.

DR. E. M. SCHAEFFER published in the *Maryland Med. Journal*, February 13, 1886, a report of his experience with hyoscine hy-

drobromate as a hypnotic in the Maryland Hospital for the Insane. In the main his results accord with those already published in the *GAZETTE* by Dr. Wetherill and Dr. Wood. Dr. Schaeffer, however, takes exception to the statement of Dr. Wetherill as to the production of sweating as one example of the physiological actions of this drug. Dr. Schaeffer has employed hyoscine in doses of from $\frac{1}{15}$ to $\frac{1}{8}$ of a grain over one hundred times, and has never observed this effect. The cases which were treated by Dr. Schaeffer included acute and chronic mania, mania with hystero-epilepsy, chorea with insanity, and melancholia. As a hypnotic, doses of $\frac{1}{15}$ to $\frac{1}{8}$ of a grain, given at night, have acted well, and this drug has therefore the merit of smallness of dose added to tastelessness. For ordinary insomnia he thinks that it will give very satisfactory results in doses of $\frac{1}{15}$ of a grain. As a cerebro-spinal sedative it has proved of decided value, quieting the insane in their talkative, noisy, and demonstrative phases. There is no enlargement of the pupil noticed, or dryness of the throat complained of. The excitement may occasionally seem to be increased when the dose is rather large. The unpleasant effects, such as nausea, headache, and loss of appetite, have been noticed in one case. Taking $\frac{1}{15}$ grains three times daily developed a profuse diarrhoea.

THE ACTION OF ADONODIN.

At a recent meeting of the Société de Thérapie (*Les Nouv. Remèdes*, January 15, 1886) M. Houchard read a note on the therapeutic action of adonodin, and exhibited a number of cardiographic and sphygmographic traces which he had obtained from patients under this mode of treatment.

Adonodin is a glucoside of the adonis vernalis, a plant of the family of Ranunculaceæ. The fresh plant possesses a caustic vesicating property, which is lost on desiccation. This action is utilized in certain countries, such as Africa and Siberia, where a closely allied variety of adonis has received the name of vesicatoria. Vesication is produced by crushing the fresh plant into a pulp between two stones, and applying the pulp to the part. Adonodin was extracted from the plant by Cervello, and prepared under the form of an amorphous, yellowish, bitter powder, and has since then been subjected to experiment by several observers, whose conclusions have already been laid before the readers of the *GAZETTE*. All observers unite in the statement that adonodin

diminishes the frequency of the pulse, at the same time increasing the vigor of the heart's contractions, until finally the heart is arrested in systole. M. Houchard has experimented on guinea-pigs, and has found that after hypodermic injections of $\frac{1}{8}$ to $\frac{1}{6}$ of a grain of adonodin the number of respiratory movements and cardiac pulsations are reduced, paralytic phenomena appear, the temperature is reduced, and death results in from fifteen to twenty minutes. In man adonodin may be given in doses of $\frac{1}{8}$ of a grain in pill form four or five times daily, and Houchard reports a number of observations as to the clinical uses of adonodin. In one case of interstitial nephritis with heart-murmur, anasarca, and commencing asystole, the administration of five or six of these pills of adonodin produced an abundant diuresis, even although sparteine had remained without effect. Adonodin had, however, to be given up temporarily on account of the nausea, vomiting, and diarrhoea which it produced. When its use was again recommenced, the secretion of urine, which in the interval had been decreased, was again rapidly increased from two to six quarts, at the same time the arterial tension became stronger, the pulse more ample and more regular, while the oedema disappeared completely. Again, in a case of typhoid fever, adonodin was found to greatly increase the arterial pressure.

THE USE OF NITRO-GLYCERIN IN DIFFERENT FORMS OF NEPHRITIS.

DR. F. P. KINNICUTT has continued his studies on the use of nitro-glycerin, and formulates his conclusions from them as follows, in a paper read before the New York Academy of Medicine at the meeting held on February 16 (*New York Med. Jour.*, February 20, 1886): 1. That in nitro-glycerin, given in small doses frequently repeated, we possessed a powerful agent for lowering increased blood-pressure, which was very commonly associated with uræmic symptoms. 2. That its power to control or relieve many of the paroxysmal disturbances of the nervous system included under the general term uræmia, headache, and asthma especially, was more marked than that of either opium or chloral. 3. That its action in parenchymatous and interstitial nephritis was to increase the amount of urine excreted, and to diminish the quantity of albumen. 4. That in nitro-glycerin we had the means of maintaining

more or less continuously lowered blood-pressure, thus averting or relieving symptoms and prolonging life. Regarding the administration of nitro-glycerin in chronic nephritis, the strength of a single dose should be just within the limits of producing subjective symptoms, and this could be determined only by careful trial in individual cases. It was well from time to time to increase a single dose to the production of subjective symptoms to learn whether the system had not become tolerant from its long use, and, if found necessary, to increase the dose.

DR. W. H. DRAPER, not being able to be present, but knowing the contents of Dr. Kinnicutt's paper, sent some notes, which were read by Dr. W. M. Carpenter. The writer had had many opportunities for observing the efficiency of nitro-glycerin in relieving uræmic headache and asthma. There could be no question, judging from his experience, of the very prompt and decided relief which nitro-glycerin gave from these distressing symptoms, and, though it sometimes failed where opium succeeded, it was certainly to be preferred to opium where it would give relief. In his experience, it had failed in cases of advanced disease, the function of the kidney being wellnigh exhausted and the heart greatly enfeebled. Concerning the ability of nitro-glycerin to control the progress of interstitial nephritis, he had no experience to offer. As to its power to diminish the amount of albumen, he thought a larger number of observations were necessary to establish this result. He was not prepared to say that nitro-glycerin as a cardiac stimulant possessed the advantages over alcohol, opium, and digitalis alleged for it by Dr. Burroughs.

DR. C. L. DANA'S experience with nitro-glycerin had been chiefly in the treatment of nervous disorders, but recently he had had occasion to employ it in six cases of renal disease. He had also administered it to five persons in health, to determine its diuretic effect, and in all it had rapidly and decidedly increased the excretion of urine, but it had to be given in considerable amount. In two of the cases of kidney-disease with acute symptoms, probably ingrafted upon a chronic condition, nitro-glycerin did not cause a diuretic effect. When given in large doses, the drug caused an increased amount of urine, which continued to increase for two or three days after stopping its use, and then began gradually to diminish. This was evident, he thought, from the charts presented by Dr. Kinnicutt as well as from his own cases.

Dr. Kinnicutt called attention to the unreliability of some specimens of nitro-glycerin, and said it should always be tested by producing subjective symptoms.

THE DIAGNOSIS OF SEX BEFORE BIRTH.

DR. JUAN BIDART (*Deutsche Med. Zeitung*, January 21, 1886) has endeavored to settle the question as to whether the sex of the foetus might be determined before birth by the frequency of the foetal pulse, and with that end in view publishes a note of one hundred cases in which he counted the foetal pulse-beat at the end of pregnancy. He concludes that when the pulse of the foetus is under 135 in the minute, in all probability it is of the male sex; while when between 135 and 145 it is a female. He claims that he has been able to foretell the sex of the child ninety-two times out of one hundred.

It is evident that, if these results are reliable, they must be of the greatest importance in deciding a number of questions, such as to whether premature labor should be induced.

THE SIGNS OF EARLY PREGNANCY.

In the practice of the gynecologist, in particular, it is frequently necessary to be positively assured of the non-existence of pregnancy before instituting such local treatment as the exigencies of the case seem to require. In the absence of such assurance, the sole course open to him is to defer treatment for a variable period of time, until the rational history or repeated vaginal and conjoined examination lead him to think that the case is one where treatment, as far as the interior of the uterus is concerned, is contra-indicated, until the ovum, which he finally concludes is probably contained within this organ, has reached maturity and been expelled. Is there any diagnostic sign by means of which, at the first local examination, the existence of pregnancy may be determined with almost positive certainty as early, even, as the fifth week of utero-gestation? Such a sign is offered to us by Hégar, and DR. E. H. GRANDIN (*Med. Record*, February 27, 1886) during the last eighteen months has had frequent opportunity of putting the value of this sign to the test, and has by means of it been able to assert as early as the fourth to the sixth week that gestation existed.

During the first six to eight weeks of pregnancy the changes in the uterus are practi-

cally limited to the body of the organ. The uterine body enlarges, especially in its transverse diameter (antero-posteriorly); the muscular substance becomes less dense. These changes are simply the result of the hyperæmic condition into which the corpus is thrown and kept by the engrafting of the impregnated ovum. As the result of such changes, the uterine body loses its nulliparous pear shape; its contour no longer gradually diminishes as it approaches the uterine neck; the body, on the contrary, bellies out over the cervix in all the transverse diameters, in particular, antero-posteriorly, and the organ, instead of being pear-shaped, resembles very much an old-fashioned, fat-bellied jug.

The above changes in the consistency and shape of the body of the uterus constitute Hégear's sign, and so far, at least in a dozen cases, it has never, according to Dr. Grandin, failed in early diagnosis. The obtaining of this sign requires, of course, a certain expertness in the bimanual palpation, and familiarity with the sensation communicated to the finger by the nulliparous uterus, and the uterus altered pathologically in one or another way. Dr. Grandin has found, however, in his clinical teaching but little difficulty in making even inexpert fingers conscious of the change. In the vast majority of cases, owing to the normally slight anterior curvature of the uterus, the internal examining finger will note this sign to the best advantage in the anterior cul-de-sac. Here the finger, instead of following the line of the cervix in a gentle curve up on to the body, is at once conscious of the body swelling out to a greater or lesser degree, according to the date of impregnation, over the cervix, and at the same time, bimanually, the body is faintly boggy, resilient, compressible. If such be the condition of affairs detected by the local examination, in the absence of rational history, in the absence of slight softening at the tip of the cervix (which may, if present, mean erosion), and of mammary signs and blue discoloration of the vagina (both of which, if present, may mean ovarian disease), Dr. Grandin now unhesitatingly pronounces the patient pregnant. The question arises, Are there other conditions which may simulate the above sign? There are two which might, —distended bladder, and uterus distended by menstrual blood. Neither of these conditions ought, however, to give rise to error, for a necessary prelude to a careful bimanual is evacuation of the bladder by means of the catheter; and retained menstrual blood in the

uterus, if not accomplished physically by imperforate hymen or vagina, would necessarily be suggested by the history (no ground for falsifying here) before sufficient had collected to give rise to even faint fluctuation. Hyperplasia of the corpus uteri cannot simulate this sign, because in this condition the conjoined touch reveals density; sub-involution cannot, because here the uterus is increased in its longitudinal as well as in its transverse diameter, and conjoined touch, while revealing heaviness and softness, does not reveal resiliency and compressibility. The markedly anteflexed corpus uteri, hyperæmic from obstructed circulation, is most likely to simulate Hégear's sign, but in case of such distortion the feeling of resiliency and compressibility is also lacking. In marked retroversion this sign is likely to fail on account of the difficulty of palpating with ease the uterine body.

THE INTRA-PARENCHYMATOUS INJECTIONS OF CORROSIVE SUBLIMATE IN TUBERCULAR PHTHISIS.

Whether regarded or not as an outcome of the prevalent theory of the microbic origin of phthisis and pneumonia, the fact that these two affections are successfully treated abroad by mercury deserves the attention of the clinician and practitioner. Of the treatment of pneumonia with mercurial ointment, as at present in vogue in the Women's Hospital of St. Petersburg, we shall speak in a subsequent article.

In a recent meeting of the Société des Hôpitaux, as reported in the *Gazette Hebdomadaire de Médecine* of January 15, 1886, DR. GOUGUENHEIM delivered an address in favor of an active therapeutic treatment of tubercular phthisis, and recommended intra-parenchymatous injections of corrosive sublimate for the purpose. Iodoform was formerly used in this manner with satisfactory results, by Beverley Robinson and Shingleton Smith, while Lépine and Truc had successes with sublimate injections in pneumonia. In the Bichat Hospital watery solutions were used of a dose of $\frac{1}{100}$ to $\frac{1}{50}$ of a gramme. The latter rather large dose is only admissible in a case marked by large cavities. It is to be remembered that the solutions ought to be of the temperature of the body. The injections are best made into the first or second intercostal space in a certain distance from the sternum, in order to avoid lesions of the heart and pericardium or of nerves and vessels. Intolerance and pain were noted to be either wholly

absent or at least only minimally present. Occasionally, however, a paroxysmal cough intervened; hæmoptysis was likewise in an exceptional case noted, and of course necessitated the giving up of this treatment. In the largest majority of cases, even if the general constitutional conditions of the patient did not improve, Gougenheim observed a more favorable state of the local conditions after the mercurial treatment. In some instances this latter improvement was strikingly rapid. Râles and tinkling sounds and even expectoration could, if not wholly removed, as happened in exceptional cases, be notably reduced in well-nigh every instance, a result hitherto unattainable by other medication. Of thirty-three cases treated with the mercurial injections, twenty-one must be said to have taken a very favorable termination, two had a doubtful issue in consequence of the change of treatment (hæmoptysis in one case), two left the hospital before completion of the cure, while ten patients died. Among these there were seven cases positively refractory to the mercury; in three others the post-mortem examination revealed an improvement of the local troubles, death having taken place either in consequence of complications or as the result of the general vital depression.

In bronchial catarrh and suspected pleuritis these infra-parenchymatous injections of corrosive sublimate were likewise practised, and attended by at least satisfactory results.

As long as a phthisical patient is regarded as doomed, and these injections occasion no pain, it will be worth while to try them, even if only with the view to improve the local lesions.

ABORTIVE TREATMENT OF BUBO.

Nearly four years ago Dr. Morse K. Taylor recommended a treatment of bubo by injection of carbolic acid, which he said in nearly all cases ended in speedy and complete recovery. In the *Med. News*, January 23, 1886, Dr. PHILIP F. HARVEY reports ten cases which he treated by this method, in all of which a prompt cure resulted. The method employed is as follows:

The skin covering the bubo is first chilled with a spray of ether; the enlargement is then grasped between the thumb and finger of the left hand, held firmly, and the point of a hypodermic syringe thrust obliquely into the centre of the gland, to a depth equalling about two-thirds of the narrowest diameter of the tumor. The syringe being charged with an

8-grain solution of carbolic acid to the ounce of distilled water, 20 to 30 minims are slowly injected. A bag of shot or sand, weighing about three pounds, is then placed on the bubo and held in place by tapes; although in favorable cases this may not be necessary. The stage of the disease at which the injection yields the best results is when the gland has attained a sufficient size to admit of the free infiltration of the injected fluid throughout its structure. At such time, one thorough injection is usually sufficient to effect a cure, and this without the patient foregoing his usual avocation. When the gland is smaller and harder, it may be necessary to repeat the injection once or oftener.

To insure a full measure of success, the following details should be borne in mind and carried out:

1. The time of election is just prior to supuration.
2. Rest, a laxative, and reduced diet assist in the dispersion of the swelling, rest being the most important adjuvant.
3. The exact point at which the injected fluid should be delivered in the bubo is a matter of importance; as also its manner of delivery. These conditions can be satisfied, however, by the exercise of ordinary intelligence and care.

EPILEPSY CONSEQUENT ON OCULAR INJURY CURED BY ENUCLEATING THE INJURED EYE.

According to the Paris correspondent of the *British Med. Journ.*, January 16, 1886, at a recent meeting of the Academy of Medicine, M. GALEZOWSKI read notes on a case in which epilepsy resulted from the loss of an eye, consequent on an accident during hunting; the eye was reduced to a stump. Six years later epilepsy declared itself, and the left eye, hitherto perfectly healthy, exhibited hemorrhagic neuroretinitis. MM. Vulpian, Hardy, Gueneau de Mussy, and Legrand du Saulle were consulted. It was decided in consultation to enucleate the damaged eye. The epileptic attacks, which had been of daily occurrence, disappeared. The patient's general health and the sight of the left eye improved, although it remained imperfect. M. Galezowski attributed the cerebral disturbance that existed to sympathetic reflex action; he believed that inflammation was transmitted by the vessels and vaso-motor nerves. In another instance, observed and reported by the same oculist, there were also sympathetic phenom-

ena exhibited under the form of neuroretinitis, accompanied by obliteration of the vessels of the retina. The patient was 47 years of age; he had lost the eye when 8 years old; nearly forty years subsequently the seat of the eye became tender, and touching it produced pain; also sympathetic symptoms were manifested in the healthy eye. In the eye which was enucleated six years after the hunting accident, both the choroid and the vitreous body exhibited osseous degeneration. There was also lymphoid infiltration in the tissues of the optic nerve, and its fibres were reduced to fine filaments. The walls of the vessels were atheromatous and thickened, so much so in some places that they were quite obliterated.

TREATMENT OF PNEUMONIA WITH INUNCTIONS OF MERCURIAL OINTMENT.

The treatment of pneumonia with mercurial ointment, proposed by BARTHEL and MORITZ, of St. Petersburg, in the *St. Pet. Med. Woch.* of January 16, 1886, is, as a typically antiphlogistic measure, of a pretty old date; for as early as 1850 the mercurial treatment was recommended by Wittich as a check and in opposition to the practice of French physicians to the employment of abstraction of blood. Of course the calomel which Wittich and his contemporaries prescribed was not exhibited in the antiseptic sense as the mercury ordered at present by the above named Russian physicians. But no matter whether the metal is supposed to reduce the excess of fibrin, diminish congestion of the lungs, and favor resorption of the inflammatory exsudate, or whether we mean to kill by its action the specific etiological factors of the disease, —Friedländer's pathogenetic microbes,—the mercurial treatment of pneumonia is usually attended by good results.

The success of iodoform and similar inunctions in a large number of peritonitic and meningitic affections induced Barthel and Moritz, chiefs of the Obuchow Female Hospital of St. Petersburg, to try the inunction of mercurial ointment in croupous pneumonia.

That mercury, if applied in the form of an ointment to the skin, was absorbed, of course is a well-established fact, and has been known ever since Voit's memorable publication, "The Absorption of Mercury and its Combinations in the Body." Augsburg, 1857.

For the last two years this has been the only medication used in croupous pneumonia,

and shows a favorable mortality-rate as compared with the records of former years. The mortality-rate of 31.4 was lowered by the mercurial treatment to 6.2 per cent., certainly a remarkable difference.

The inunctions are to be begun with at once when the diagnosis is established. Morning and night a drachm is to be used; in very grave cases 3 instead of 2 drachms may be used daily. The inunction is to be made on the extremities, abdomen, and back; the thorax is to be left exempt, as the skin in this locality is wanted intact for the water-compress. (The German routine treatment of respiratory affections, *vide* Berlin letter of GAZETTE, January, 1886.)

There were used in one case 2 drachms of mercurial ointment; in three cases, 3 drachms; in seven cases, 4 drachms; in six cases, 5 drachms; in one case, 6 drachms; in one case, 7 drachms; in seven cases, 8 drachms; in three cases, 9 drachms; in one case, 10 drachms; in one case, 12 drachms; in one case, 13 drachms.

In spite of directly ordered gargles of chlorate of potassium, the authors observed in some instances slight gingivitis and moderate salivation, though never a serious stomatitis or colitis. Alongside of these inunctions the inevitable compress was applied on the thorax, as intimated above, and digitalis and quinine given, according to the indications of the case.

In view of the very favorable record produced by this mercurial treatment, we can only support the recommendation by our Russian colleagues of mercury in croupous pneumonia.

ON THE ADVANCED OPERATIVE TREATMENT FOR THE RADICAL CURE OF HERNIA.

At the meeting of the Medical Society of the County of New York, held January 25, 1886, DR. ROBERT ABBE (*New York Med. Journ.*, February 6, 1886) read a paper with this title, in which he first mentioned conditions which rendered a radical cure of hernia desirable, and then briefly referred to a number of operations which had been performed, which, although their safety might recommend them, had been condemned because of their failure to cure. This remark might almost be said to be applicable also to Heaton's method. This method seemed to have been used more commonly in this country than in Europe. The operation with which the paper had specially to deal, however, was the open one, which the author had adopted in twenty-one cases. The method

of procedure adopted by surgeons in this country and abroad was essentially the same. In Liverpool, especially, the silver-wire suture was employed instead of catgut for closure of the ring. In view of the importance of an operation for the radical cure of hernia, exact information regarding the histories of patients operated upon should be had, in order to judge of the real merits of the procedure. For this reason he gave the histories somewhat in detail of the twenty-one cases in which he had done the open operation. In sixteen of the cases there was not strangulation, and in a portion of the others the symptoms of strangulation were not very marked. The result of the treatment had led him to ask two questions,—first, was the open operation a safe one? and, second, did it effect a radical cure? If we judged by the statistics of Liverpool surgeons we must admit that it was safe, but such good results had not been obtained elsewhere. Other statistics showed a death-rate of one in eight. It was true, however, that this showed the result of treatment in the worst cases, for only such had usually been subjected to operation. There were dangers arising from adherent intestine, incarcerated omentum, fatty heart, feeble health, etc. Again, we had to face the fact of possible hemorrhage. Banks, of Liverpool, had referred to a case of hemorrhage in which the patient recovered after laparotomy and securing of the bleeding point. The accident had also occurred in the hands of experienced surgeons in New York. It took place in one of the cases reported by the author, in the manner in which he believed it usually occurred, namely, by shrinkage of the mass of omental tissue and loosening of the ligature. To avoid this accident he advised the use of carbolized silk, ligating the broad and thick mass of omental tissue three, four, or even five times, and in addition securing any bleeding vessels on the cut surface. Peritonitis, suppuration, and hemorrhage had been the three bugbears which had led surgeons to let the hernial sac alone. But the greatest danger from peritonitis was due to the development of erysipelas, and the occurrence of this accident was not very likely if antiseptic methods were strictly observed. Inasmuch as hemorrhage had occurred in the hands of the most careful and experienced surgeons, it might be a question whether it could be adequately guarded against in all cases. In one of the twenty-one cases death occurred from fatty heart and intestinal obstruction brought on by the relations of the returned omental stump. It was

not probable that, had laparotomy been performed, the constricting band could have been divided. In a third case the open operation was performed, and at the same sitting some varicose veins of the leg were operated on, which resulted in suppuration and death. The hernial wound was doing well. The author was decidedly of the opinion that suppuration and union by granulation in the canal and about the ring led to a much better final result than primary union did. This was also the estimation of the granulation process by English surgeons. Adhesive inflammation about the ring, excited by whatever method, was delusive. The induration following Heaton's method usually disappeared within a month. If we could bar the ring tight, and keep it barred, we might keep back pressure, but the catgut suture became absorbed within a week, and allowed the strain to come upon the soft tissues too soon. The patient should support the parts from without many weeks, and perhaps many months, after the operation. With regard to a return of the hernia, it was extremely probable that there would be a recurrence within a year or two. It was much less likely to follow an operation upon a femoral hernia than upon an inguinal hernia. But recurrence of the hernia was not a sign of failure of the operation, for the patient was almost always restored from complete invalidism to perfect health and ability to do his work. The sixteen unstrangulated herniæ which he had operated upon had all been unmanageable, and all of the patients expressed great satisfaction at the result of the operation.

DR. A. G. GERSTER had performed the radical operation in twenty-five or more cases. In the larger number kelotomy had had to be performed under urgent conditions, and this operation was supplemented by that for radical cure. In eight or nine of the cases there was no strangulation, but the symptoms were so distressing, principally on account of adhesion of the omentum or gut, that the patients were unable to wear a truss and attend to their business. He thought the results were rather better in those cases in which there was not a largely distended abdominal ring. Of all the cases, death had taken place in three, and in each of them kelotomy had had to be performed. One patient died of necrosis of the gut, which had been returned under the supposition that it was viable. In another case follicular diphtheritic inflammation developed, and in the third case death was thought to be due to septic peritonitis from

necrosis of the gut, but an autopsy was not permitted. In all the cases in which kelotomy was not indicated the patients recovered without disturbance. He therefore thought the operation, in the hands of one familiar with all the details of antiseptic methods, could be considered safe. As to relapses, he had not yet seen a case in which a relapse had not taken place, or would not have taken place had not an instrument prevented it. He thought, with the author of the paper, that when a cicatricial plug formed it was more solid than if simple adhesive inflammation took place. A truss should always be worn after the operation.

DR. R. F. WEIR had performed the operation for radical cure in a number of cases of strangulated hernia, but in such cases it was to be taken without the saying that we should seek to close the canal if possible. For herniæ not strangulated he had performed the operation eight times, and he thought we were justified in undertaking it in cases in which the hernia was large, perhaps irreducible, rendering a truss useless, and disabling the patient for work. But he had seen three deaths from hemorrhage after the open operation, occurring in the practice of surgeons of experience. In two or three of his own cases the amount of suppuration and constitutional disturbance after the operation had been very considerable, and he had been anxious lest peritonitis should develop. If, after the best of these operations, attended by even a moderate amount of risk, the patient was obliged to wear a light truss, he would ask why extend the operation to those cases of reducible herniæ which could already be kept up with a light truss? He had not yet lost faith in Heaton's injection method for cases of mild hernia. He thought it would result in cure in from one-third to one-half of such cases, and he should be unwilling to adopt the open operation.

DR. O. A. WHITE said that he had devised a modification of Wutzer's instrument for invaginating the hernial sac and exciting adhesive inflammation with the intent of plugging the canal. The modified instrument contained two needles instead of one, and was lighter than the original, weighing only half an ounce. He had operated in over forty cases, and he believed it had not been necessary to operate twice in more than five cases. The instrument was left in place about four days, a truss was put on, and the patient was kept in the recumbent posture until it was safe for him to get up.

DR. ABBE, in closing the discussion, said he was afraid to use such instruments as the one presented by Dr. White, through fear the needles might pierce the intestine and give rise to dangerous inflammation. History, it seemed, did not record such accidents, but he had seen three cases in which he thought the instrument, had it been used, must have pierced the intestine. By the open method one could see what he was doing. The cases in which the operation seemed to be specially applicable were those in which there was troublesome incarceration, and those in which a reducible hernia continued to grow larger and larger, and could not be controlled with a truss. Such cases of hernia, if femoral, were more dangerous than if inguinal, and the operation offered surer relief.

THE INFLUENCE OF SEA-BATHS IN SCROFULOSIS.

The prize essay of the Paris Academy of Medicine, entitled "*De l'Influence des Bains de Mer Sur la Scrophule des Enfants*, par DR. CAZIN" (Paris, 1885, Asselin & Houzeau), recommends itself as a highly valuable contribution to the literature of the therapeutics of scrofulosis. The author of the work, physician-in-chief of the famous French resort, Berck-sur-Mer, has an experience of an unusual extent, forty-one thousand seven hundred and eighty-three scrofulous children having come as patients under his observation. He prescribes, 1, sea-air; 2, external application of the sea-water; 3, internal use of it. The principal beneficial effect, however, emanates, in Cazin's estimation, from the sea-air, which, by virtue of its ozone, purity, and aseptic properties, materially favors the blood-making process and the general innervation.

The sea-water is ordered either in the form of the bath in the open sea or in the warmed basin; besides these are used compressors, soaked in sea-water, against swollen glands and joint-inflammations, irrigations against atonic ulcers and inflammations of the bony structures, and, finally, douches and atomization of warm sea-water. Cazin thinks but little of the beneficial effects of the warm sand-bath; at least he has never observed any therapeutic advantages from its use.

Sea-water taken internally in small doses increases, according to Cazin's observation, the appetite and corrects a faulty digestion. Bread and other victuals prepared with the aid of sea-water contribute likewise to the tonic and

resolvent effects of the sea-cure. The author details the treatment of the various forms of scrofulosis, such as gummata, cold abscesses, affections of the skin, infantile leucorrhœa, swelling of the glands, diseases of the eyes and eyelids, affections of the throat and nerves, and bone and joint defects. Even tuberculosis of the scrotum and scrofulosis of the intestines are discussed, all in an interesting and strictly scientific manner.

However agreeable and even salutary a short stay at the sea-shore is for a scrofulous child, permanent curative or reparative effects can only be anticipated from a stay of years, or, at the best, of several months, though there are notable exceptions to the latter observation. An interesting view of Cazin is the following: The tuberculosis of poor children can be cured more rapidly, thoroughly, and easily than that of rich children, the former being acquired, the latter inherited. Cazin also asserts that the phthisical process is checked and slowed by a protracted sojourn on the sea-shore.

In conclusion, we find an interesting review of the sea-shore resorts for scrofulous children existing in the various countries. The author, of course, only refers to places of a charitable nature. The oldest institution of this kind, and probably the most famous, is Margate, in England, founded in 1796; then comes Viareggio, in Switzerland, and next in age stands Cette, in France.

The numerical statistics of the principal countries are as follows: There are three resorts in England, fifteen in Italy, five in France, one in Austria, three in Holland, five in Germany, one in South America, three in North America. The latter resorts are: 1, Atlantic City, Children's Sea-Shore House; 2, Boston, Sea-Shore Home for Sick Children; 3, Barth, Summer Home for Children.

TREATMENT OF PELVIC ABSCESS IN WOMEN BY INCISION AND DRAINAGE.

DR. PAUL F. MUNDÉ draws the following conclusions from an elaborate paper with the above title published in the *American Journal of Obstetrics*, February, 1886:

1. Pelvic abscess in the female is not very common in proportion to the great frequency of pelvic exudations, and probably does not occur in more than ten per cent. of all cases, the majority of exudations terminating in spontaneous absorption.

2. Pelvic abscess may be either extra-

peritoneal, the result of cellulitis (by far the most common variety), or intra-peritoneal, the consequence of pelvic peritonitis. If intra-peritoneal, the adhesive inflammation between pelvic viscera and intestines may so seal the abscess-cavity as to render it *practically extra-peritoneal*.

Abscess of the ovary and pyosalpinx do not belong in the category of "pelvic abscess" proper, and do not fall under the same therapeutic rules, unless when, by agglutination to the abdominal wall or to Douglas's pouch, they become virtually extra-peritoneal.

3. Small deep-seated pelvic abscess, not exceeding a capacity of two ounces, and minute multiple abscesses in the cellular tissue can often be permanently cured by evacuating the pus thoroughly with the aspirator. The surrounding exudation is then rapidly absorbed.

4. About one-half of the abscesses open spontaneously into the vagina, rectum, bladder, or through the abdominal wall and ischiatic fossa. These cases may gradually recover without treatment, or the sinuses may persist until closed by surgical interference.

5. Abscesses containing more than two ounces of pus should be opened by free incision along an exploring needle or grooved director, cleared of *débris* by finger or blunt curette, and drained and irrigated, if necessary, through a drainage-tube.

6. This incision should be made at the spot where the pus points most distinctly, which is usually the vaginal vault.

7. In a certain number of cases the pus points through the abdominal wall, generally in the iliac fossa, and the incision should then be ample, and free drainage should be secured.

8. When the pus has burrowed deep into the pelvic cavity, and a probe can be passed from the abdominal incision down to the vaginal roof, mere abdomino-cutaneous drainage will not suffice, and a counter-opening must be made in the vagina and a drainage-tube carried through from the abdominal wound into the vagina. This drainage-tube may have to be worn for months. In making this incision care should be taken not to wound the bladder.

9. The opening of a pelvic abscess which points through the abdominal wall does not differ from and is no more dangerous than the same operation elsewhere on the cutaneous surface of the body. It is not an "abdominal section" or a "laparotomy" in the sense that these terms are now used to indicate the surgical opening of the peritoneal cavity.

10. Chronic pelvic abscesses, which have burst spontaneously and have discharged through the vagina, rectum, or elsewhere for months or years, are exceedingly difficult to cure. This is particularly the case when the opening is high up in the rectum. A counter-opening in the vagina, or enlarging the opening if there situated, the curette, stimulant irrigation, etc., may occasionally succeed, but usually fail.

11. A perityphlitic abscess may point through the abdominal wall and simulate a pelvic abscess proper. Aspiration will settle the diagnosis; the treatment is the same.

12. The majority of cases of pelvic abscess recover; at least the mortality is small.

ON IODOL.

DR. GEORG BENNO SCHMIDT reports in the *Berliner Klinische Wochenschrift* on the advantages of iodol, as ascertained from the use of this antiseptic at the surgical clinics of Heidelberg. Iodol, or tetraiodopyrol, has a light-brown color, and is almost odorless, in which respect it offers a decided advantage over iodoform. Unfortunately, it is not very soluble in water, only in a proportion of 1 to 5000. In alcohol it dissolves in three times its weight. The drug is employed in the following manner:

1. As a powder, in the same manner as iodoform. Being a finer powder, it enters and covers the part more completely than the former. It forms no scurf (in opposition with iodoform) on the wound, renders the secretions odorless, favors the formation of healthy granulations, and has a general salutary influence on the nutrition of the affected part.

2. As solution, in sixteen parts of alcohol and thirty-four parts of glycerin, for the saturation of uterine or rectal tampons. It is also injected in this form into emptied or scraped-out abscesses.

3. As gauze.

4. In combination with vaseline and collo-dium.

In no instances, in spite of its extensive use, were any symptoms of intoxication observed, nor was ever any iodine after its use discoverable in the urine. It is probable that its action depends upon the generation of free iodine, though we have no definite data yet regarding this point. At all events, its action is prompt and harmless, and offers no small advantage over the iodoform in the absence of any odor, though its poor solubility and its

(at present) high price are equally great objections.

ARTERIAL LIGATION AS A PROPHYLACTIC MEASURE AFTER SUDDEN, COMPLETE, AND PERMANENT OCCLUSION OF THE CHIEF VEIN AT THE ROOT OF AN EXTREMITY.

This subject depends for its interest and importance on these two questions:

1. When the chief vein of an extremity has been suddenly, completely, and permanently occluded at its root, are the collateral venous blood-paths always sufficiently ample to admit such a flow of blood through them that permanent circulatory and nutritive disturbances will not supervene?

2. If, in any appreciable proportion of cases, permanent circulatory and nutritive disturbances are likely to supervene upon such venous occlusion, what prophylactic effect, if any, would be exerted by the diminution of the force and volume of the arterial blood-supply of the limb?

These two questions form the basis of an elaborate paper published by DR. LEWIS S. PILCHER in the *Annals of Surgery*, February, 1886, from which he draws the following conclusions:

1. Serious circulatory and nutritive disturbances are to be apprehended: *a*, in the upper extremity, when, in addition to the occlusion of the main vein at its root, simultaneous occlusion of any considerable number of the lesser and collateral branches has also taken place; *b*, in the lower extremity, when the occlusion of the main vein at its root is sudden and complete, and has not been preceded by any conditions which might have occasioned a previous dilatation of collateral channels or the development of new ones.

2. The accidents of excessive œdema and of gangrene, when they occur, are due to the intense and active congestion of the limb, through the arteries, with blood for which there is no adequate outlet.

3. The development of collateral paths is not by the breaking down of valve-barriers at the entrance of large collateral trunks, but by the dilatation of a multitude of minute branchlets. To effect this an increased arterial *vis a tergo* is not required. Any increase in the normal blood-pressure is attended with danger of overwhelming and fatally choking up the somewhat slowly enlarging collateral radicles.

4. The diminution of the amount of arterial blood which enters a limb whose chief venous

outlets have become occluded down to an amount not greatly in excess of that which can readily find an outlet from it through paths still remaining, is the first great indication to be fulfilled in the treatment.

5. Whatever method is adopted to restrain the flooding of a limb with arterial blood, it must still permit the entrance of a supply sufficient for the nutrition of the limb. For this reason, in the lower limb, ligation of the common femoral is to be avoided, especially in the light of the disastrous results of such ligations already recorded.

6. Ligation of the axillary artery in the upper extremity, and of the superficial femoral in the lower, are safe expedients, and to be adopted as prophylactic measures whenever occlusion of the venous outlets of a limb is so great as to hazard the integrity of the limb by reason of the circulatory stasis produced.

PROFESSOR WINTERNITZ ON THE OBESITY CURES.

In the issue of the 7th of February, 1886, of the *Wien. Med. Presse* we find the conclusion of a series of articles written by PROF. WINTERNITZ, which are of a rather polemic tone, against the numerous obesity cures which have of late attracted so much attention. We shall probably find an opportunity in another number of the GAZETTE to refer to these interesting papers, which conclude as follows: Methodic excitation of sweat, influence of cold, appropriate and systematical work increases the physiological fat-combustion so powerfully that these factors not only deserve more attention than has been hitherto bestowed upon them, but also render useless the strict and one-sided cures as employed at present.

THE USES OF PYROGALLIC ACID IN DERMATOLOGY, AND SOME OF THE DANGERS ATTENDING ITS APPLICATION.

About seven years ago pyrogalllic acid was introduced as a substitute for chrysophanic acid in the treatment of psoriasis, and has since been used in a variety of skin lesions with much success. At times, however, its application has been followed by poisonous effects, and the drug has consequently largely been given up.

Experience, however, has shown that it is by far the most satisfactory method we possess for the treatment of lupus. The mode

of application as recommended by Schwimmer is as follows:

Vaseline is first applied for several days, or as long as necessary to remove all secondary morbid products, scales, secretions, and dirt; a ten per cent. pyrogalllic ointment is then applied during from four to seven days, being renewed two or three times daily. Vaseline is now to be applied again for one day to remove all of the acid. The entire suppurating surface is now to be covered with the mercurial plaster, under which healing takes place in from ten days to two weeks. This process may be gone through with several times until no more tubercles appear. Prof. Schwimmer says the treatment of a case seldom exceeds three or four months. A speedier and much better resolution of the most advanced and wide-spreading lesions is found to take place under this combined plan of treatment than could be accomplished by the combined treatment of scarification and the thermo-cautery.

DR. CHARLES W. ALLEN (*Journ. Cutaneous and Venereal Diseases*, January, 1886) has employed this mode of treatment in five cases of lupus with quite favorable results. Pyrogalllic acid has also been used with success in the treatment of chancroids, psoriasis, and a variety of other skin-diseases, some of which are illustrated by other cases reported by Dr. Allen. The dangers, however, attending the uses of this agent are twofold. They may be either constitutional effects or local injuries to the healthy skin: of the former, cases have been reported in which the external use of pyrogalllic acid ointment produced chill, rigors, or shivering, preceded possibly by malaise and headache, and coming on rather suddenly, at a variable time from the beginning of the applications. There are usually diarrhoeal stools and vomiting of glairy mucus. The patient soon sinks into a state of collapse with sunken eyes, pallid or cyanosed appearance of the lips, a peculiar greenish hue of the skin, elevation of the pulse-beat and temperature, and acceleration of respiration with dyspnoea. The urine becomes dark brown or black, of high specific gravity, and usually contains hæmoglobin and albumen. The reflexes are diminished. In the early stages there is marked insomnia and restlessness. Towards the close there may be coma. The dyspnoea is due to pulmonary œdema and congestion of the lungs. There may be a condition of general anasarca.

The symptoms persist only so long as the poison is being eliminated, and when this has been accomplished, convalescence is good and

rapid, provided the patient's strength be maintained.* In these four cases we find two deaths and two recoveries.

As to treatment, that adopted by Besnier, in the case in which the patient's life was saved after being despaired of, appears rational. He was led to make use of the oxygen inhalations by the brilliant results obtained from it in the intoxication from carbon dioxide, in true asphyxia, and in malignant syphilis. He looks upon the vomiting and diarrhoea as salutary, and does not advise their being checked.

These cases, of which only about half a dozen have been reported, show that it is unsafe to practise friction over an extended surface at one time, and that a mild ointment should be used,—not over five grains employed in the twenty-four hours. As regards the local action on healthy skin, Dr. Allen himself reports two cases in which the action of the acid overstepped the boundaries of the disease, and caused serious injuries to healthy parts.

Aside from the use of the powdered drug in full strength, and of the five and ten per cent. ointment, Dr. Allen has employed at times the various combinations of pyrogallic acid with gelatin, collodion, and gutta-percha, which of late years have been recommended, and which are now prepared and placed upon the market by a number of firms. In many cases they are greatly to be preferred to other applications, having the advantage over them of cleanliness, ease of application, a certain amount of pressure exercised, and support given to the tissues, etc. The application of the powdered pyrogallic acid causes occasionally thick crusts to form, which may become irritating to the tissues, and which at times are not easily removed.

He has had successful results in psoriasis and other affections, from the employment of a collodion containing about forty grains of pyrogallic acid to the ounce, and the addition of eight or ten drops of castor oil.

This forms an excellent dressing for lesions about the face and other exposed parts. When first applied to a raw surface some pain is experienced, but this soon passes away. It had seemed that from these fixed dressings only a slight effect of the drug could be obtained, but he has been surprised at times to see how marked an effect is produced by them.

To procure, however, a powerful and speedy result, it is well at all times to apply the powder to the lesions, and, after drying of all secretions, to paint over a medicated collodion or traumaticine.

In conclusion, then, we find that in pyrogallic acid we have a drug valuable, not only in psoriasis, for the treatment of which affection it was first introduced, but furnishing one of the means of combating other and more serious diseases.

That its application is not without dangers both to the general system and to the body's healthy surface. That it is capable of producing death in the one case, and extensive sloughing in the other. That although the application of the drug in its full strength as a powder is efficacious, it is attended with some disadvantages. The crystals should be powdered before being applied.

For many cases a well-made fixed dressing, which adheres nicely to the part, possesses advantages which make it preferable to other applications. This is especially true of lesions of the face and hands.

The intensity of the effect produced appears to be in a measure proportionate to the thickness of the layer of fixed dressing painted upon the parts.

PHENIC ACID IN INTERMITTENT FEVER.

DR. NARICH's communication to the *Progrès Médical* of January 30, 1886, on the curative power of phenic acid cannot fail but invite universal attention.

Though no physician would venture to question the miraculous and truly specific influence which the Peruvian bark and its numerous alkaloids exert over the malarial intoxication, it is nevertheless an incontestable fact that occasionally patients are encountered who declare that quinine or any other form of cinchonization has utterly failed to relieve them. And if the physician then, remembering the instructions of his clinical teachers, or those of his text-books, exhibits arsenic, and finds that even this drug does not check the dreaded paroxysms, and that his patient rapidly approaches the limits of exhaustion and nutritive failure, he is truly in no enviable dilemma. Such a patient presented herself for treatment to Dr. Narich, of Smyrna, in Asia Minor, and asked to be treated by a new remedy, as the standard treatment did not benefit her. The patient, who was an intelligent lady of about 35 years, had suffered for the last year of quotidian marsh fever, and had consulted both the Arabian and European physicians of her country. Quinine and bromides were prescribed together, and given for seven days, morning

and night, without producing any results. Arsenic was tried, and failed likewise.* Having once heard of the advantages of phenic acid in refractory cases of malaria, Dr. Narich resolved to try this drug hypodermically. He dissolved seven grains of the crystals in two fluidounces of water, and injected a small quantity in the right arm. There appeared redness, with elevation, and a somewhat erysipelatous appearance round the point of injection, but disappeared soon after. A second injection was followed by a rather painful induration which lasted four days. His mode of injection was as follows: On the first day he injected one syringe-ful. On the four succeeding days six syringes daily,—three in the morning and three at night. All in all, thirty-three injections were made. On the fifth day the patient complained of malaise, which increased on the following day, and forced the physician to discontinue the injections on the seventh day. Since the twentieth injection, however, up to date of the publication, for an interval of nine months, the patient has had no more paroxysms.

Although the successful employment in a single case of a certain drug does not suffice to establish its virtues, the phenic acid injections should be borne in mind by those practitioners who have to deal with some very refractory cases of malaria, in which the usual medication has failed.

THEINE AS A LOCAL ANALGESIC.

From experiments published in the GAZETTE for September, 1885, Dr. Mays drew the conclusion that theine, the active principle of Chinese tea, possesses marked analgesic properties, and his conclusions have been confirmed by DR. C. H. CASTLE in a paper read before the Cincinnati Medical Society (*Cincinnati Lancet-Clinic*, Feb. 6, 1886). Dr. Castle has used theine three times upon himself. The first time he injected one-sixth of a grain into his left forearm, immediately below the flexure of the elbow-joint. The noticeable effect was remarkably rapid. An angry blush and swelling spread from the point of injection, but what looked like a most delicately tender

spot was singularly devoid of sensation. It was not nor did it become totally anæsthetic, but, in what appeared to be an inflamed area, sensibility was markedly dulled. Presently a numbness such as we feel when a member is beginning to "go to sleep" from pressure upon its supplying nerves stole over his wrist and hand. Little tinglings, scarcely noticeable had not one been on the watch for strange manifestations, came and went in various places. At no time was mobility impaired. The temperature of the left hand was markedly lowered. The effects of the injection lasted about two hours.

The second injection was made under somewhat different circumstances. Dr. Castle rather severely bruised his right hand, and the pain on pressure over the carpo-metacarpal joint of the fifth metacarpal bone was quite severe. He therefore injected one-third grain of theine subcutaneously over the ulnar nerve, just below the elbow.

The same phenomena were noticed as in the first use of the alkaloid: sensibility around the injection was markedly diminished, lower down the forearm and in the wrist and hand less markedly so; the right hand lost as much in temperature as had the left hand previously, but he was disappointed in the analgesic effect he had expected. The extreme sensibility was dulled, and his hand no longer hurt as it had before, but any deep pressure instantly showed that the nerves about the joint still resented the impact of a foreign body with the surface.

The third observation was made again upon the left arm; this time one-half of a grain was used, and, though an accident perhaps somewhat marred the experiment, some points were brought out more prominently. The injection was a deep one, inter-muscular, and the withdrawal of the needle was followed by a slight hemorrhage, sufficient to raise a conical, subcutaneous tumor of a diameter of a one-cent piece. Instantly there was deep-seated pain, probably due to extravasation from the wounded vessel into the inter-muscular planes, and flexion of all the fingers and thumb. Full extension was impossible, partial extension very painful, the painful seats being deeply under the point of injection and the dorsal aspect of the metacarpo-phalangeal joints.

As in former observations, sensibility was affected almost immediately, and in three minutes the left hand was blanched in appearance and almost cold to the touch. His pulse was always full and strong, but slightly more

* This reminds us that Dr. M. E. Hensler, of West Franklin, Indiana, reported some years ago a number of refractory cases of marsh fever cured by the combination of arsenic and quinine. He gave 15 grs. of quinine morning and evening, and at the same time 3 tablespoonfuls of a solution of $\frac{1}{2}$ dr. of Fowler's solution in 3 $\frac{1}{3}$ of water.

frequent than normal. Very soon after the injection mental excitement appeared and alternated with spells almost of a fainting character. These were seven or eight in number, commencing soon after the injection and gradually ceasing after the lapse of six or seven hours.

Dr. Castle twice applied theine to the conjunctiva: first with a one per cent. solution, which he thought produced slight anæsthesia, and once in a four per cent. solution, in which the alkaloid could only be kept in solution by maintaining the water at from 125° to 130° F. Instead of anæsthesia, intense injection of the ocular conjunctiva was the only result of the instillation.

He reports three cases in which theine was used for the relief of pain: two of rheumatism and one of neuralgia of the sciatic nerve. In the first cases considerable relief followed the hypodermic injection of one-sixth of a grain of theine. In the last case one-third of a grain of theine was injected over the sciatic nerve, and, while numbness of the leg from the knee down was produced, and a temporary relief of the pain, the next morning the pain had returned. He refers also to another case, of which the nature is not stated, in which there was absolutely no benefit whatever derived from the use of this alkaloid.

ON PTOMAINES.

ARMAND and GAUTIER publish some interesting remarks on the obscure but important subject of ptomaines in the *Gazette Hebdomadaire de Médecine* of January 15, 1886, of which we can only abstract some few salient points:

If the fibrin of the blood is well washed and freed from all of its extractive matters, we obtain alkaloids, in form of crystallizable salts, derivatives from the albuminous constituents of the blood. It is established that these alkaloids form even normally in the cells during life, and that they play a considerable but hitherto unexplained rôle in numerous pathological processes. Experimental physiology teaches us that these cadaveric alkaloids, or ptomaines, as they are called, extracted by ether, chloroform, or amylic alcohol, possess an exceedingly toxic nature. The free ptomaines are still more dangerous than their salts, especially those soluble in ether.

Injected into a frog the ptomaines produce the following symptoms: 1, dilatation of pupil; 2, tetanic convulsion, followed soon

by muscular flaccidity; 3, slowing of the heart-beat and pulse, rarely an increased pressure; 4, absolute loss of sensibility in the skin; 5, loss of muscular contraction. In a dog we obtain somewhat different appearances. We note under their influences: 1, irregularity and retraction of the pupil; 2, a remarkable vascular injection of the concha; 3, slowing of the respiration; 4, somnolence, followed by convulsions and death; 5, loss of the muscular contractility, even under electrical irritation. The last phenomenon recalls the intoxication by poisonous mushrooms and by muscarine.

THE TREATMENT OF CERTAIN FORMS OF CHRONIC MALARIAL DISORDERS.

DR. S. SOLIS-COHEN read a paper before the recent meeting of the Philadelphia County Medical Society, from which he draws the following conclusions (*Maryland Med. Journ.*, Feb. 6, 1886):

I. That quinine salts are of greatest value in those cases of chronic malaria showing distinct periodicity, and especially if there be a febrile paroxysm; and that in such cases their chief value is prophylactic rather than curative. That the administration of quinine until relief is manifested, and then the withdrawal of the drug, will sometimes bring out a periodicity otherwise masked. The bimuriate of quinine and urea, hypodermically, is the preferable salt in acute or subacute exacerbation occurring in the subjects of malarial cachexia.

II. That in cases where the patient is much run down and exposed to unsanitary conditions, iron should be part of the medicinal treatment.

III. That where the most prominent symptoms are connected with the nervous system, including apparent pulmonary, cardiac, intestinal, or gastric troubles, arsenic is indicated.

IV. That where the most prominent symptoms are rheumatoid or myalgic in character, salicin, or some of its derivatives or compounds, is of advantage; cinchonidine salicylate, by preference, in order to obtain the anti-malarial virtues of the cinchona alkaloid. Cinchonidine salicylate is also of use in maintaining an effect produced by quinine after the withdrawal of that drug, and is superior to quinine where the paroxysmal manifestations are vague and irregular.

V. That iodine is of some benefit when administered alone, and of decided benefit when combined with other remedies.

THERAPEUTICS OF FEMALE STERILITY.

From the advance sheets of the still unpublished book of PROF. KISCH (Prague-Marienbad), entitled "Sterility of Women," we abstract its therapeutical views, and present them to our readers in a condensed form.

The therapeutics of female sterility has as its object the removal of such causes as have brought about this pathological condition. But this testifies at once to the difficulty and uncertainty of the therapeutic interferences.

The first step toward a cure of this defect is a scrupulous and minute anamnesis of the genital and marital relations not only of the wife but also of the husband, provided such be possible. We have to consider the sexual development of the woman, the age of her maturity, and nativity of menses, with all details. We have to search for a scrofulous, syphilitic, or other hereditary taint, to inquire as to her past state of health, diseases of childhood, and the history of her family and relations, especially in view of an absent or scanty procreative ability. The delicate questions concerning the coitus, its relations, nature, and consequences, can unfortunately be not avoided. It is necessary for the physician to know whether it occasioned pain or the normal gratification, whether the introduction of the penis into the destined parts is impeded or not, and whether the sperma rapidly flows out again from the vagina. (A case is reported to Kisch where a lady consulted him for her sterility, which was afterwards traced to a condom used by the husband without her knowledge.) If possible, the sperma of the husband is to be examined microscopically. It is gathered in a condom, and brought for inspection immediately after the coitus. Several drops of vaginal or cervical mucus are likewise taken from the parts immediately after a coitus, the sperma placed in it, and the possible influence of the female secretions on the male noted. Occasionally we observe numerous spermatozooids moving to and fro in the semen; but, when placed in the secretion of the female genitals, they lose at once their mobility. This of course shows that the *materia peccans* in this instance does not rest with the man. Some men object to the examination of their semen as an insult; they regard *potentia cœundi* as identical with *potentia generandi*.

We have to find out whether germ-formation is impeded, or whether inherited or constitutional alterations are present in the ovulum, which render the same unimpregnable. Besides, we have to search for organic affec-

tions of the ovaries or their neighborhood, which either prevent the formation or the descendance of the egg. The tubes or the cervix may be at fault on account of a congenital or acquired narrowness. Perhaps the secretions of the vagina are morbidly affected, so as to render the sperma inert. Numerous other questions of this kind are all deserving of our consideration, and we see that only by the most careful and minute scrutiny is it possible to reveal, of the numerous possible causes, the reason of the sterility in a given case.

Sims's assertion that the cure of sterility can only be accomplished by surgical interference is untenable. The principal factor is a medication which raises the nutrition of the entire organism, improves the blood-formation, and favors the resorption of pathological products in the sexual organs. For in a large majority of cases presented for treatment we have to deal with anæmia, chlorosis, and scrofulosis. Local alterations in the parts of course require their rectification, such as the various forms of flexion and version. Occasionally surgical interference is called for in cases of abnormal conditions of the hymen, or of abnormal communications between vagina and neighboring organs, or, finally, on account of neoplasms.

The prophylaxis of sterility deserves the fullest attention of every practitioner. The first requisite, of course, is a complete sexual maturity in both the husband and wife, which, as everybody knows, is not always the case at the present day, especially in so-called high life.* Another important factor is the avoidance of marrying relatives. The results of this principle, as practised for centuries among the Spanish nobility, are too well known to require any illustration. In certain savage races, on the other hand, the exogamic principle—*i.e.*, to marry only women from another tribe—is strictly observed. Next in importance as prophylactic measures stand proper diet, regimen, and occupation of the girl, especially during the period of menstruation, and, in case of a married woman, additional prudence in her confinement. Jumping, dancing, riding on horseback or in sleigh, often lead to inflammations of ovaries, peritoneum, and pelvic connective tissue, especially during menstruation, with the ultimate result of sterility. There are girls who for modesty's sake

* This recalls the instance of the successor to a European empire, who, marrying the daughter of a European king, found that for a whole year his wife had not yet menstruated.

do not wish to acknowledge their menstrual indisposition when asked to join in a dance or sleigh-ride, and who after a while pay a severe penalty for their misplaced bashfulness. That masturbation also enters to a certain extent into the causes productive of sterility seems very plausible, though, of course, definite information in this direction is wanting. In some instances the fault lies with a deficient involution of the uterus subsequent to a confinement, while uterine catarrhs and residual exudations are to blame in other cases. Indeed, metritis has been occasionally produced by venereal excesses of husband and wife, so that even in this direction precautions are not out of place.

In conclusion, Kisch advises every mother to fully instruct her daughter previous to an intended marriage of her future duties, and to give her such admonitions as will lessen or remove the chances of a future sterility.

INFANT FEEDING.

At the meeting of the Medical Society of the State of New York, held February 3, 1886, DR. E. F. BRUSH, of Mount Vernon, read a paper with this title, and pointed out some simple methods of feeding an infant when it had been deprived of the breast (*New York Med. Journ.*, February 6, 1886). He urged the value of simple foods in preference to the so-called "patent foods," the composition of which was often unknown. He had examined the composition of the once famous "Liebig's food for infants," and of another popular food, and indicated the dangerous amount of alkali contained in them, citing Dr. Jacobi's warning that "we are not very careful in doses of alkalies in general," and Dr. Stillé's remark that alkaline treatment "lessens the amount of fibrin in the blood." He showed by the figures furnished by one of the advocates of peptonized food that the results of such feeding were not satisfactory. Proceeding, then, to the immediate subject of his paper, he stated that one of the greatest elements of failure in the artificial feeding of infants was the desire to give one sort of food alone under all circumstances, and hence the blind prescription of patent foods. He advised, on the contrary, the preparation of foods from simple articles to meet the requirements of each case as it arose. When with food thus prepared there was a failure, the physician at least knew what the failure arose from. Commencing, then, with the child at birth, the

author gave his formula for the best substitute for colostrum, and his further treatment of the cathartic effect was either excessive or defective. He then discussed the question of the best staple food. He had no hesitation in saying that it was cow's milk, which, however, was subject to many conditions that rendered it unfit, unless due care was exercised. In 1879 he had pointed out the difference between the milk of the ruminant and non-ruminant animals as regarded particularly the quantity and quality of the casein contained in them, and the difficulty experienced by infants in digesting a milk intended for calves. When an infant vomited a hard curd, the indications were that the milk must either be prevented from coagulating in the stomach or coagulated and broken up before entering the stomach. He showed that it was inadvisable to use an alkali, and therefore preferred the latter course, that of coagulating and breaking up the milk before giving it. In other cases he recommended the addition of lime-water as the safest agent, as it did not, like other alkalies, keep the stomach in an alkaline condition, nor cause an acid condition of the intestines. In case of diarrhoea in children fed on milk, the indications were to stop the milk immediately. The milk was usually the cause of the trouble, and it was rendered unfit by the physical condition of the cow, such as rutting, gestation, the ingestion of poisonous herbs, cruel treatment, and the like, to all of which states many cases of diarrhoea in infants could be traced. In these cases of diarrhoea he recommended oatmeal-water, which his analysis had convinced him was somewhat similar to milk in composition. He insisted on the necessity of the medical attendant himself preparing or teaching the preparation of these simple foods. In all cases the child should be put back on its ordinary milk diet as soon as possible. As to the kind of cow best adapted to supply milk, he preferred the common-grade cow to the Jersey or fancy breeds. The latter were of a tuberculous tendency, the fat in the milk was not sufficiently emulsified, and they were of an excessively nervous temperament, while the common cow ordinarily was gentler and a good feeder. She should always be stall-fed. When milk was bought, that of one cow should always be avoided. In cases of constipation, raw malt-water, carefully prepared as a diluent of the milk, was efficacious.

DR. JACOBI said that the tendency of cow's milk to coagulate in a very hard curd could be overcome by a method which he had some

years ago learned from Dr. Loomis. It consisted in adding half a teaspoonful of dilute muriatic acid to a pint of water, mixing this with a quart of milk, and then boiling. The taste was pleasant, and coagulation would take place in fine particles, as in woman's milk.

THE REMOVAL OF SUPERFLUOUS HAIR BY ELECTROLYSIS.

Among the various methods adopted for the removal of superfluous hair there are none so easy of performance, so painless in their operation, so certain in their destruction of the hair-papilla, and which leaves fewer traces of an operation on the surface of the skin than electrolysis. Dr. Mechel, the oculist of the Missouri College, first introduced the operation for the treatment of trichiasis. To Drs. Hardaway, of St. Louis, White, of Boston, and Piffard, of New York, we are indebted for the introduction and popularization of electrolysis as a method of destroying hair.

MR. GILBERT SMITH (*Brit. Med. Journ.*, January 23, 1886) adds his testimony to this, and states that in his hands in all cases this mode of treatment has been most successful, and that he has had an opportunity of examining some patients six months after the removal of hair, and has found that there has been no return of the growth.

The apparatus required for the operation consists of a galvanic battery of from ten to fifteen cells, a sponge electrode, a No. 14 needle, an electrode needle-holder, and two cord conductors, each a yard in length.

The needle, properly fixed in its holder, is, connected with the negative, and the sponge with the positive, pole of the battery. The needle is carefully introduced into the follicle alongside the hair, which is used as a guide to the papilla, the moistened sponge-electrode being grasped in the patient's hand (the needle should be applied before the circuit is completed by the sponge electrode, and the converse after the operation,—that is, the sponge-electrode should be released before the needle is withdrawn, otherwise pain will be caused).

The needle is held in position from ten to thirty seconds, according to the size of the hair, until slight frothing is produced, or a wheal appears around the mouth of the follicle; the sponge-electrode is then loosened and the needle withdrawn.

The hair should now be removed, and the

ease with which it is extracted indicates the completeness of the operation. If the hair does not leave the follicle with the feeblest traction, the needle should be reintroduced one or more times. Shortly afterwards slight redness and swelling are perceptible.

Under a strong lens it is not difficult to introduce the needle directly into the follicle; but this is not absolutely necessary, as the requisite destruction occurs if the instrument be in its immediate neighborhood.

In a few hours the circumscribed congestion disappears, leaving small papules and pustules at the point of operation, which may remain visible for some weeks. For this reason, where the hairs are numerous, as upon the upper lip, not more than twelve should be removed at a sitting, leaving an interval of a week or two between each operation. Where there are but few hairs upon the less prominent regions, all of them may be removed at one sitting; although it may be remarked that the tediousness of the process soon tells upon the operator.

Minute scars are most apt to occur where it has been found necessary to introduce the needle into the same follicle a number of times, or where hairs situated closely together are removed at one time; but even the most marked cicatrices are scarcely noticeable after the first few weeks.

Like all operations of a delicate nature, this requires a certain amount of skill and manual dexterity, only to be acquired by some experience in its performance; this, however, is easily gained.

The amount of pain felt differs in different patients, varying according to the region attacked or the sensitiveness of the patient; while it is not trivial, it is not unbearable, and a tolerance seems to be established after a few sittings.

HYPODERMIC USE OF THE BLACK AND RED OXIDE OF MERCURY.

DR. WATRASZEWSKI, of Warsaw, has used calomel injection in syphilis for about two years, but feels, according to his statement in the *Centralblatt für die Med. Wiss.* (January 9, 1886), little satisfied with the results obtained. In the majority of instances he noted after three injections considerable local and constitutional disturbance, such as lassitude, weakness, and diarrhoea, besides ischiatic pains, swelling and abscesses in the gluteal region, where the injection was made. These objections to the calomel injections induced

Dr. Watraszewski to try other preparations of mercury. He found that both the red and the black (hydrated) oxides of mercury proved less objectionable, and that employed in doses of about 1 grain (in suspension in water or gum arabic) hypodermically they demonstrated a prompt specific power. Two to five injections are quite sufficient, and it is well to allow of an interval of six to eight days between the single injections. Although Watraszewski has made over two hundred of these injections, he never observed any unfavorable secondary effects following them. Pain was little or not at all complained of, and abscesses were never observed. The black oxide appears to act somewhat more mildly than the red oxide, though in their general effects they are quite interchangeable. Our author claims to have obtained satisfactory results with these preparations of mercury not only in the initial stages of the syphilitic infection, but also in its so-called tertiary forms.

A NEW TREATMENT FOR FRACTURED OLECRANON.

DR. CLAYTON PARKHILL (*Denver Med. Times*, January 23, 1886) recommends as a method of treating fractured olecranon that the fractured surface be denuded, by a subcutaneous operation, of all ligamentous or fibroid cartilaginous tissue that may have formed. For this purpose he recommends an instrument with a blade similar in size and shape to a tenotome, but having a double edge, bent at an angle of forty-five degrees with the shaft. The skin should be punctured at one side of the line of fracture, making a valve wound. A curved cannulated needle, threaded with strong silver wire, is introduced at this opening, and carried as close to the bone as possible, so as to include, if it be to the distal side of the fracture-line, the fibres of origin of the forearm muscles and the periosteum. Crossing the gap between the fragments, let the instrument emerge on its opposite side, at a point corresponding to that of entrance. Leaving the wire in position, withdraw the needle. After being again threaded, let it be re-entered at the point of exit, and carried across the opposite fragment, including the fibres of insertion of the triceps and the periosteum, to emerge at the first point of puncture. When the needle is removed, it will be observed that the four ends of the wires issue from the two points of puncture. The amount of soft tissue included by

the wires must vary with the case and the judgment of the operator. A careful examination should be made to see that the ulnar nerve is not within the tissue surrounded. By twisting the corresponding ends of wire, the fragments will be brought into apposition. If desirable, the ends may be cut close and allowed to disappear, thus making the ligature wholly subcutaneous. One wire might be used after the manner of ligating a varicocele; but should it be desirable, either after the cure is completed, or at any other time, to remove it, it will be found that two wires can be taken out with less pain to the patient and greater ease to the operator than one.

A certain amount of inflammation will be engendered by the ligature, but probably not more than will be necessary to the process of cure. Should it be excessive, however, circumstances will be most favorable for its control.

An anterior splint should be used, holding the arm in a slightly flexed position.

This operation was at first intended only for ununited fractures. Statistics show such a small proportion of cases in which bony union has taken place, that it becomes a question whether it is not a proper method of procedure in recent fractures.

The writer offers the above simply as a suggestion to the profession. While he has not had an opportunity of testing its efficiency, he believes that it combines all the desirable points of the received operations and avoids their dangers.

QUILLAJA SAPONARIA AS AN EXPECTORANT.

We have already in a previous number referred to Kobert's proposition as to the substitution of quillaja bark for senega, and DR. F. GOLDSCHMIDT reports in the *Zeitsch. für Ther.*, December 15, 1885, the results of a series of experiments which have been made with this drug. The mode of administration was to make a decoction of 75 grains of the bark in 4 ounces of water, to which 5 drachms of syrup may be added. Of this mixture a tablespoonful may be given every hour. Quillaja was employed in thirty cases, invariably with favorable results in cases where the expectoration was difficult, such as in high degrees of emphysema, dilatation of the bronchi, and chronic bronchial catarrh. After the use of quillaja the expectoration always became more copious and easier and the respiration freer. It therefore appears that quillaja possesses the power, in a very marked degree, of

rendering expectoration easier. Contrasted with the other expectorants, it is well known that the ammonia alkalies, apomorphine and ipecac, when employed for any length of time, nearly always occasion such marked digestive disturbance as to entirely prevent their use. Senega, in its mode of action, and in the results which it produces, is closely comparable to quillaja. Both are able to start suppressed secretion, and to aid the removal of it when profuse. The advantages of quillaja over senega have already been alluded to. The mode of action of quillaja appears to be twofold. It not only increases the vigor of the cough, and so facilitates the removal of secretion, but it also renders the secretion more fluid, and so enables its removal with greater readiness.

PERMANENT DRAINAGE IN ASCITES.

At the recent meeting of the New York Academy of Medicine, DR. AUGUSTUS G. CAILLÉ related the history of two cases (*Philadelphia Med. Times*, February 20, 1886) illustrative of the value of permanent drainage in the treatment of ascites. About four years ago he saw an elderly gentleman suffering from cirrhosis of the liver, in whom the symptoms depending upon ascites were so marked as urgently to demand tapping and repetition of the operation. He was tapped nine times in the course of seven months, a painful of serum being removed each time. Before the tenth operation Dr. Caillé determined to attempt permanent drainage, although the danger of exciting a peritonitis or other serious complication was fully appreciated. An incision an inch in length was made in the median line half-way between the umbilicus and symphysis pubis, a trocar and canula introduced, the trocar withdrawn, and a rubber tube inserted. After withdrawal of the fluid the tube was allowed to remain, iodoform being put upon the dressing at the mouth of the tube, and the fluid allowed to drain and be absorbed by towels. Some eczema developed under the dressing, which disappeared under suitable management. After drainage had been established the œdema disappeared rapidly, the heart-action improved, the breathing was freer, the troublesome cough disappeared, the bowels became regular, the appetite improved, and the patient became able to go about, wearing all the while the tube. The rubber canula remained *in situ* about nine weeks, when it was removed, and at the end of another four weeks the opening

closed. The patient was able to be about his duties for nine months, there being no return of the œdema or of the ascites. After nine months his strength began to fail, and he finally died of heart-failure. Two weeks before death there was a return of slight œdema of the ankles. At the autopsy cirrhosis of the liver and fatty heart were found. Careful inspection of the peritoneum at the seat of puncture revealed no evidence of inflammation.

The second case was similar, and in addition there was marked purpura hæmorrhagica, epistaxis, bleeding gums. The patient had no appetite, and was unable to sleep. He was treated as was the other patient,—in this case a rubber tube being employed to conduct the drainage from the rubber canula to a bucket by the bed containing a carbolic solution. The tube was worn for seven weeks. The ascites and œdema disappeared. The appetite improved. There was, in short, improvement in all the symptoms. The patient was able to pass ten weeks with his family in the Catskills, and continued to live a comfortable existence until the spring of 1885, when he died suddenly, as was supposed of heart-failure, when attempting to get out of bed. There was no return of the ascites. An autopsy was not allowed.

In his general remarks Dr. Caillé considered four questions:

1. What are the symptoms and dangerous mechanical effects of ascites?
2. How is the collateral circulation established in cirrhosis of the liver?
3. Will the absence of intra-abdominal pressure or pressure from ascites promote collateral circulation and functional activity of important organs, and thereby prolong life and add to the comfort of the patient?
4. How is drainage best accomplished?

After considering these questions, the author said he was inclined to believe from this limited experience that we need not fear peritonitis so much when ascites is present as under other circumstances. Too much importance, however, should not be attached to these two cases, for the number was too small to judge from them of the value of this procedure. It was the author's opinion, however, that it should be given a trial in cases of ascites which required two or more tapplings for re-accumulation of fluid.

The PRESIDENT said it appeared to him that what Dr. Caillé had done in these two cases was what might have occurred spontaneously. Probably some of the gentlemen present had

seen cases of extreme ascites in which spontaneous rupture of the abdominal walls had taken place. He had seen some such cases. The place of rupture was usually in the median line, particularly at the umbilicus. In such cases there was, of course, a permanent fistula established, and, instead of allowing it to occur at a spot which was not convenient or pleasant, he thought it was better for the surgeon to make the opening where he wished it should be established. There was such a case in the German Hospital the past year,—that of a heavy German, in whom spontaneous rupture took place at the umbilicus, allowing of the escape of the ascitic fluid. It healed and reopened several times in the course of a few months. The patient felt so well satisfied with his condition that he left the hospital, but naturally the shrinking liver and swelling spleen still remained.

The President then described a case of encysted ascitic fluid which occurred in his ward in the Bellevue Hospital last year, in which the physical signs were almost exactly those seen in a patient, over twenty years ago. In the case seen long ago he made the diagnosis of ovarian tumor, and, although post-mortem examination proved his error, he still thought that the diagnosis of ovarian cyst was the only one justified by the signs during life. He had this case in mind when contemplating an operation upon the patient in Bellevue Hospital, yet the signs were so plainly those of an ovarian cyst that an incision was made, when it was found that the fluid was ascitic, limited by adhesions. Permanent drainage was then established for a time, and the patient improved and left the hospital. He had since heard that the fluid had reaccumulated. There was a family history of tuberculosis, and it was probable she had tubercular peritonitis.

Since learning of Dr. Caillé's operation, Dr. JACOBI had performed it upon a man suffering from cirrhosis of the liver, with jaundice, purpura, epistaxis, loss of strength, ascites, dyspnoea, etc. As his strength was constantly diminishing, and the symptoms demanded relief, he established permanent drainage midway between the umbilicus and urinary bladder in the manner described by Dr. Caillé, leaving the tube in several weeks,—until the patient's death, for he had been dying for some time. The canula was obstructed by wax during the night, drainage being continued only during the day. The patient felt relieved. Post-mortem examination revealed no peritonitis. Dr. Jacobi thought the operation of Dr. Caillé a good one, and he would

repeat it whenever a suitable case came under his observation.

The question of medicinal treatment of cirrhosis of the liver having been raised, the President said that small doses of corrosive sublimate, long continued, were beneficial in all forms of interstitial inflammation, whether in the form of a myelitis, a nephritis, or a hepatitis. Of course when the disease was advanced its progress could not be stopped, but when only a portion of an organ was involved this treatment might enable us to prolong the patient's life indefinitely.

MENINGITIS AFTER EXCISION OF THE EYEBALL.

At the meeting of the Ophthalmological Society of the United Kingdom, held January 28, 1886, Mr. E. NETTLESHIP (*Brit. Med. Journ.*, February 6, 1886) read a paper, based on the case (at the Moorfields Hospital, in July, 1885) of a young man who was operated upon unsuccessfully for dislocation of the lens into the anterior chamber. The eye was excised in a state of early, but violent, suppurative inflammation, seventy-two hours after the attempted removal of the lens. The orbit was irrigated with a very weak solution of biniodide of mercury. The man became restless and excitable, with high temperature, within forty-eight hours, and died seventy-five hours after the incision. He was attended by Dr. Stephen Mackenzie. Purulent meningitis was found at the base, and between the cerebrum and cerebellum; there were no tubercles. It was remarkable that well-marked tough thickening of the pia mater, and firm adhesion of the opposite edges of the longitudinal and Sylvian fissures, were found, undoubtedly indicating a previous attack of general meningitis, but the early history of the patient was almost negative. Mr. Nettleship had tabulated all the other cases of meningitis after excision of the eye, twenty-nine in number. No cases were included in which it was known that the operation was complicated by injury or disease of the walls of the orbit. Of the thirty cases, twenty-six were fatal, and eighteen of these were examined after death, and meningitis found in all; the remaining four cases recovered, usually after a long and severe illness. In a considerable majority, the meningitic symptoms set in within forty-eight hours of the enucleation, but the duration of the illness, when fatal, varied more than the period of onset. Except that the meningitis usually affected the

base, and was sometimes more marked towards the front and on the side of the excised eye, and that twice there was thrombosis of the cavernous sinus, there was very little macroscopic evidence of transmission from the orbit; but microscopic examination in four cases showed inflammation in or around the optic nerve, and in one inflammation and micro-organisms in the sixth nerve. It is suggested that, in spite of the rarity of visible thrombosis, the veins may in some cases be the carriers, and that (owing to the numerous anastomoses) the blood-current in the cerebral veins might sometimes be reversed, allowing septic material to pass from the orbit upwards to the brain, instead of into the jugular vein. In some cases only the convexity was affected, and in others the disease was more marked on the side opposite to the excision. In a considerable majority, the excised eye had been wounded; but the author dissented from Von Gräfe's statement (1863) that the risk of meningitis was much greater if the eye were suppurating when excised, since it appeared that in exactly half of the cases no visible suppuration was going on, or had occurred, in the lost eye. The disease was probably due to infection of the orbital wound, either by the decomposition of discharge pent up by tight bandaging, or (as was probable in two cases) to erysipelas. Complications were present in a few cases. Mr. Nettleship believed that with care the cases might be rendered even much more rare than they had hitherto been, especially by providing free drainage from the orbit when there was much inflammatory swelling. He at present preferred excision, with suitable precautions, in all cases, to evisceration, as it had not yet been proved that the latter operation might not cause sympathetic disease. Only four cases of meningitis following other operations upon the eyeball were known, and in only one was a post-mortem examination made. In certain cases of meningitis after excision, sympathetic inflammation had set in some time before the meningitis, a fact which seemed to militate against the theory that sympathetic disease passed from the exciting to the sympathizing eye by the meningeal coverings of the optic nerve.

THE DIGESTION OF MILK.

DR. M. REICHMANN draws the following conclusions from a number of elaborate experiments as to the digestibility of milk in the

human stomach (*Deutsche Med. Zeitung*, No. 82, 1885):

First.—Boiled milk leaves the healthy stomach more rapidly than an equal quantity of unboiled milk.

Second.—The digestion of boiled milk is more rapidly accomplished than that of unboiled milk.

Third.—The coagulation of unboiled milk in the stomach is complete in five minutes.

Fourth.—This coagulation is not caused by the acid of the gastric juice, but by the influence of a special ferment (milk-curdling ferment).

Fifth.—The acidity of the gastric juice is at first due almost solely to lactic acid, and, later in the process of digestion, to the presence of hydrochloric acid.

Sixth.—Hydrochloric acid first appears in perceptible amount forty-five minutes after the ingestion of half a pint of milk.

Seventh.—For the first hour and a quarter after the ingestion of milk the acidity gradually increases, and then decreases, until the milk has entirely left the stomach.

Eighth.—The curds of casein in digestion of boiled milk are much softer than in the digestion of uncooked milk.

INDICATIONS FOR OPENING THE MASTOID PROCESSES.

DR. A. R. BAKER (*Cleveland Med. Gazette*, February, 1886) publishes the following summary as to the most recently stated indications for opening the mastoid processes in cases of purulent disease of the middle ear:

1. Purulent inflammation in the mastoid process appearing in the course of suppuration of the middle ear when persistent severe pain in the bone cannot be subdued by the application of the ice-bag, leeches, or by Wilds's incision (Schwartz).

2. Painful inflammation in the mastoid process occurring in acute and chronic suppuration of the middle ear, in consequence of growths filling up the external meatus or the tympanic cavity. When attempts to remove the obstacle to the free escape of pus have failed, the operation is imperative (Grünig). The operation is indicated even though the soft parts over the mastoid are not swollen or infiltrated (Politzer).

3. When the posterior superior wall of the meatus is bulging, and when, after incision, the abscess is not emptied and the symptoms of retention of pus continue (Toynbee, Duplay).

4. Persistent pain and tenderness in the mastoid process, lasting for days or weeks, in which there is probably an osseous abscess not communicating with the tympanic cavity (Politzer).

5. In every suppuration of the middle ear, combined with inflammation of the mastoid process, in which fever, vertigo, and headache are developed during the course of the affection, which may indicate a dangerous complication. In such cases the indication for the operation is vital (Politzer, Roosa, Buck).

A SIMPLE METHOD FOR THE TREATMENT OF CHRONIC UTERINE CATARRH.

DR. KUGELMANN (*Zeitsch. für Ther.*, No. 21, 1885) states that he has frequently obtained relief in nasal catarrh through the inhalation as a snuff of finely-powdered iodoform deodorized with Calabar bean, and this success led him to the employment of iodoform, blown into the uterus, as a treatment of chronic catarrh of that organ. The vagina is first washed out with water, then with three per cent. carbolic acid, and then dried with cotton. A male catheter is then filled with the proper amount of iodoform, and, after being suitably curved, is introduced into the uterus, and the powder blown out by means of a rubber bulb, which may be readily attached to the end of the catheter. In the removal of the catheter, care must be taken not to allow the bulb to expand until the catheter is entirely withdrawn, otherwise the powder will of course be sucked again from the cavity of the uterus into the catheter. The only precaution necessary is to have the catheter entirely dried, otherwise the powder will of course stick to the tube and cannot be blown out. The process may be repeated twice weekly. Dr. Kugelman states that he has invariably been satisfied with the results.

THE TREATMENT OF GONORRHOEA.

Though the treatment of gonorrhœa has unquestionably undergone a great change for the better during the last few years (as shown by the less frequent occurrence of stricture, orchitis, bubo, etc.), it is by no means certain we have arrived at the best method of dealing with it. In the incubative stage, injections of nitrate of silver have been for the most part abandoned, and it is now pretty well agreed that the more mild and soothing the

treatment is at this as well as during the acute period, the more likely is it to bring the case to a satisfactory termination. If any injection is used at all, it should consist simply of warm water or a very weak solution of permanganate of potassium or boric acid. Mr. Watson Cheyne has of late been employing bougies of eucalyptus and iodoform, injections of sulpho-carbolate of zinc (gr. ii to the ounce of water) and copaiba internally, apparently with good effect, though Dr. F. P. ATKINSON (*Practitioner*, February, 1886) believes that this form of treatment is more suitable to the third stage of the disorder. Effervescing citrate of potassium administered internally is of great use in lessening the general febrile condition, the pain in passing water, and also the tendency to orchitis and bubo. The patient should take a light nourishing diet, such as milk, barley-water, soup, broth, and light puddings, with bread-and-butter, toast, and biscuits. All stimulating alcoholic drinks, condiments, and coffee should be avoided.

In the third stage, when the sense of scalding has passed away, Dr. Atkinson generally orders some copaiba, or oil of sandalwood capsules, or Cleret's *copahine mège* sweet-meats. If the discharge is not lessened by this treatment, then injections of sulphate of zinc (gr. iii), sulpho-carbolate of zinc (gr. ii), or permanganate of potassium (gr. i) to the ounce of water, or Watson Cheyne's bougies will often prove of great benefit. If, however, these do not seem to effect the desired purpose, then the best thing is to inject into the membranous portion of the urethra (which will generally be found to be painful when reached) a solution of nitrate of silver (containing from two to five grains to the ounce) by means of Erichsen's liquid caustic catheter. Two or three drops only are ejected by this means, but this quantity is quite sufficient to stop the discharge, and it rarely, if ever, requires to be repeated more than two or three times at intervals of from five to seven days. Some persistent cases of gleet have come under Dr. Atkinson's care which have readily yielded to this treatment, and it seems certain that ordinary injections do not reach the real seat of the mischief.

COCAINE IN THE TREATMENT OF HYPOPION.

MR. GUNPUT SING states in the *Indian Med. Gazette*, December, 1885, that a woman suffering from keratitis and hypopion in both

eyes came under his care, in whom, on account of the great pain and photophobia from which she was suffering, his assistant put a two per cent. solution in both eyes and told her to wait. When examined a short time afterwards, it was found that the hypopion of the left eye had disappeared, and that in the right eye was greatly diminished. Being doubtful as to whether this relief of the hypopion was really due to the instillation of cocaine, he tried it in several other cases, and found that the drug invariably caused the disappearance of hypopion when of at all recent formation. When of longer standing it greatly diminishes their size, but generally some inspissated matter remains over which it does not have any power, and this is removed by tapping. In two cases the hypopion again formed in two days, but cocaine again dispersed it speedily, and it did not again appear. In some cases only two hours are required for the complete dispersion of the hypopion.

RESEARCHES ON THE MALARIAL INFECTION.

The Italian physicians have at all times evinced a lively interest in the study of the malarial infection, which in no country possibly assumes a more malignant and at the same time domestic type than in their own. The investigations of Crudeli and Tomasi on the parasitic cause of malaria, instituted and published some two years ago, will be recalled by many of our readers. At present we have before us some further observations in the same direction by PROF. MARCHIAFARA and DR. CELLI, which appear to solve the mystic problem of the cause of this affection (vide *Deutsche Medicinal Zeitung*, January 25, 1886). We content ourselves with rendering the principal results of their observations, as follows:

1. In the blood of every person suffering from malarial fever we find enclosed in the red blood-corpuscles peculiar microbes, consisting of homogeneous protoplasmic particles, endowed with a very lively amœboid movement. These microbes allow of a distinct coloration, and occur only in this affection; they were termed by the authors "plasmodies or hæmoplasmodies of malaria."

2. In the interior of these microbes we often find a red or black pigment (melanine), which, however, is no integral portion of theirs, but is obtained from transformation of hæmoglobin, which the parasites have abstracted from the red blood-corpuscles.

3. If this production of pigment has taken place, we have malaria with melanæmia, if not, malaria without melanæmia. This refers also to the grave cases of a pernicious or fatal nature.

4. The parasites propagate themselves by the process of fissure.

5. Intravenous injection of malarial blood produces malaria in a previously healthy person.

6. The plasmodies increase in number with the progress of the malarial infection, and decrease with the regression of the symptoms under cinchonization.

OPERATIVE TREATMENT OF POPLITEAL ANEURISM.

There are now few surgeons who, when called upon to treat a case of uncomplicated and limited popliteal aneurism, do not first try the treatment of it by some form of compression. When compression fails to cure popliteal aneurism, or when the case is one unsuitable for it, the treatment most invariably suggested in practice is ligation of the femoral artery at the apex of Scarpa's triangle. Should ligature of the femoral artery fail to cure the disease, or should pulsation of the sac return and persist after this operation, the usual advice in practice is to try compression above the seat of ligature, or to try the flexion method, or, these failing, to tie the external iliac or common femoral arteries. Should all these methods fail, there only remains the choice between amputation and opening the sac, and the general opinion of surgeons is that amputation gives the most favorable chance to the patient. The old operation of laying open the sac and securing the artery at the point of communication with it is occasionally referred to by authors, but it is certainly not advocated in the case of popliteal aneurism. MR. THOMAS ANNANDALE (*Edinburgh Med. Journal*, February, 1886), while advocating the treatment of popliteal aneurism by some form of compression in suitable cases, and, this failing, by ligature of the femoral artery, believes that the old operation has been heretofore too much ignored by surgeons, and that in certain cases of this disease it should be used until proof is advanced of a safer proceeding than those methods which are usually adopted, and that the antiseptic ligature and dressing in this operation is now a very simple proceeding in properly selected cases, provided the circulation in the sac can be checked during the

operation; and this, in a case of popliteal aneurism, is always possible. His method of operation is to open the aneurismal sac and remove all clots; a bougie is then inserted into the opening of the artery, and passed along the canal of the vessel upon its cardiac aspect; two small incisions are then made in the wall of the sac immediately above this opening; the aneurism-needle is then passed through these incisions and under the artery. A ligature is then drawn through by means of the aneurism-needle, and tied around the vessel upon the bougie, the latter being gradually withdrawn as the ligature is tightened. The same proceeding is carried out upon the distal end of the artery, the bougie being inserted again and passed downwards.

Mr. Annandale reports a case of popliteal aneurism which was successfully treated by this method. He also alludes to two other successful cases treated by this plan, and refers to them in support of the opinion that the old operation is to be preferred to ligature of the femoral artery in Scarpa's triangle in the following conditions of popliteal aneurism:

1. In cases of large aneurism filling up the space and interfering by pressure with the venous and other circulation of the limb below, or causing serious nerve-pressure.
2. In rapidly-growing aneurisms which have attained some size.
3. In ruptured and diffused aneurisms.
4. In aneurisms which have involved the knee-joint by pressure.
5. In aneurisms attacked with inflammation and suppuration.
6. In aneurisms which the ligature of the femoral artery and compression have failed to cure.
7. In arterio-venous and other aneurisms of traumatic origin.
8. In cases of general arterial disease, provided surgical interference is considered necessary or advisable.

In such of these conditions which are of an acute nature there must be no delay in performing the operation; and should symptoms of gangrene already be present in any case, amputation is the rule.

PHYSIOLOGICAL ACTION OF ISOCICUTINE.

We abstract from the *Comptes Rendus* (vol. c. p. 806) the following points on the action of isocicutine from a paper of Dr. ROCHEFONTAINE. The drug is chemically considered the hexahydride of β -collidine, and isomeric with

cicutine. It is prepared synthetically, and is practically an alkaloid. On frogs its action is similar to that of curare; it paralyzes first the spinal cord and medulla oblongata, then it destroys the excitability of the motor nerves and muscles, and ultimately produces cardiac failure. Warm-blooded animals put under the influence of the drug perish under symptoms of general weakness and respiratory paralysis. It remains to be seen whether this drug, which, to judge from the above experiments, possesses a very distinct and powerful physiological action, can be utilized for therapeutic purposes.

THE TREATMENT OF MALARIAL FEVERS WITH TINCTURE OF IODINE.

MR. W. E. HENDRICKS states in the *Indian Med. Gazette*, December, 1885, that since the 15th of April last he has treated fifty cases of malarial fever with iodine. He believes that the iodine constitutes an efficient and cheap substitute for quinine. He has tried not only quinine but all the alkaloids, and arsenic as well, and in one or two cases he claims that more beneficial effects were derived from iodine than from quinine. Its use has been followed by no bad results. He was first induced to try the effects of iodine internally in a case of tertian ague with congested spleen of enormous size; with the thought that instead of applying the tincture externally, which after a period of sixteen years he had found almost useless, perhaps better results might be obtained by internal administration. For this purpose 5 minims each of the iodine and iron tinctures were given in an ounce of water twice daily, and after continuing this treatment for six days the fever that before then had come on regularly every day for three months quite disappeared, and the spleen began to diminish in size. The case remained under treatment for one month; up to which time the fever never returned, although the spleen still remained slightly enlarged. Of the fifty cases treated he states that there has been no return of fever as yet, though some of the cases were treated as long as six months ago: the average retention of the patient on the sick-list so treated was only 4.3 days. In only one case had he to increase the dose of iodine from 5 to 10 minims, the former quantity not being sufficient to produce complete recovery, although the duration of the fever was cut short from three to six hours. Headaches as the result of malaria have also been successfully treated by this drug.

JABORANDI AS A GALACTAGOGUE.

There is a decided difference of opinion among therapeutists as to the effect of jaborandi upon the mammary gland. Some claim that it is without effect; others insist that its use produces an increase in the secretion of milk. DR. H. LOWMAN (*Cleveland Med. Gazette*, February, 1886) reports notes of four cases in which the fluid extract of jaborandi appeared to act as a galactagogue in the recent puerperal state. In the first case, a multipara of 35 years of age, the secretion of milk commenced to fail two weeks after delivery until not one-third the average quantity was produced. The fluid extract of jaborandi was then given in doses of 8 minims every three hours. On the second day of the administration of the drug the milk increased in quantity. By the third day it had increased still more, so that the child had nourishment from the mother sufficient to satisfy it. Increased salivary and cutaneous secretions led to the discontinuance of the drug; but the milk flowed in good quantities for eight days and then rapidly diminished. Jaborandi was then used, and increase of the milk was again noted. It is, however, worthy of note in this case that the mother's health underwent a great change for the better during the time the jaborandi was given. Iron, quinine, and mineral acids were given, and the nourishment of the mother was pushed as much as possible; so it is very questionable whether the use of the jaborandi and the temporary increase of the milk-secretion were more than coincidental. That, however, the jaborandi exerted a certain amount of influence upon the secretion seems to be proved by three other cases which Dr. Lowman reports, in every one of which the milk-secretion was increased the day after the commencement of the jaborandi, while, when the drug was stopped, the milk at once commenced to fail in quantity, although perhaps not until four or five days after the discontinuing of the drug. On the other hand, Dr. Lowman refers to three other cases in which jaborandi was used with scarcely any effect at all.

THERAPEUTICS OF UTERINE HEMORRHAGE.

MENDES DE LEON reports in the *Arch. f. Gyn.* (xxvi. p. 147) his success with the use of hydrastis Canadensis in various forms of uterine hemorrhages. In fourteen cases the drug was given four times daily in 20-drop doses fourteen days before menstruation, and asserted its reputation (1) in menorrhagias, (2)

catarrhs of uterus, (3) chronic inflammation of the pelvic connective tissue, (4) retroflexion, (5) version of a fixed uterus, (6) climacteric hemorrhages.

As an explanation of the therapeutic effects of hydrastis Canadensis our author points to the general vascular contraction and subsequent diminished congestion of the genital organs. But in a few instances undesirable after-effects set in; twice grave nervous symptoms, such as delirium and unconsciousness, were noted.

THE TREATMENT OF GONORRHOEA OF THE FEMALE.

The inevitable result of not treated or half-treated gonorrhœa of the female is the extension of the disease to the uterus, thence to the tubes and ovaries and peritoneum. We can treat the disease effectively only while it remains in the vagina. Once let the virus reach the uterine membrane, whence it is but a step to the tubes, and the danger is imminent that local medication will be of little avail to prevent the following possibilities: sterility, salpingitis, oöphoritis, cellulitis, peritonitis. Nothing more should be requisite to prove the prime necessity of immediate and active treatment of gonorrhœa of the female, and attention has been recently directed to this subject by several papers which have been abstracted in recent numbers of the GAZETTE. One of the most important of these, by Dr. Currier, advocates the free application to the vagina of bismuth and glycerin. DR. E. H. GRANDIN (*New York Med. Journ.*, February 13, 1886), however, believes that far more active measures are needed and a far earlier application of treatment. Active treatment is indicated from the outset. The method which Dr. Grandin recommends is as follows: The patient occupying the dorsal position, choose the largest cylindrical speculum which can be inserted into the vagina. Wipe out the vagina thoroughly; then the cervical canal with a cotton-wrapped applicator. Take a fresh applicator, dip it in a solution of nitrate of silver (3ss to ʒi), and pass it to the internal os. Then pour into the speculum a teaspoonful or so of the same solution, and gently rotate the speculum out toward the vulva, thus keeping the vagina distended, and enabling the solution to come into contact with every portion of the mucous membrane. Depress the speculum, and allow the excess of solution to escape into a pus-basin. Reinsert the speculum, and place one or two vaseline tampons in the vagina. Remove the

speculum, and, separating the labia, paint the vestibule with a solution of the same strength. Next, if Skene's ducts are implicated,—and they usually are,—slit them, open with a narrow bistoury, and insert the fine point of a stick of lunar caustic to the bottom. Next, wipe out the urethra with a dry applicator, and then apply, as far as the neck of the bladder, a solution of the same agent (gr. x to ʒi). Finally, paint the vulva and surrounding parts with this latter solution, the object being to allay the itching and to destroy any virus which might linger there. The patient is to be told to remove the tampons at the end of twenty-four hours, and to wash out the vagina with a solution of chloride of ammonium (ʒii to Oi), this being preferred on account of its refrigerant action. This treatment is followed by no unpleasant reaction (on the contrary, the patients speak of immediate relief), and the sequelæ are none other than good. If thorough at the outset, it rarely will require repetition; but at the patient's next visit, in five or six days, we shall find the characters rather of a simple elytritis, and this we may treat according to special fancy. Dr. Grandin's is for the renewed use of the silver solution in one-third strength, to be followed at the after-visits by alterative applications (iodine) and by depletants (glycerin).

ACTION OF VARIOUS DRUGS ON ASCARIDES.

SCHRÖDER communicates to the *Arch. f. Exp. Pathologie* (xix. p. 290) the results of his observations of the action of numerous drugs on the ascaris family. For the purposes of experimentation he used the ascaris lumbricoides which occurs in the pig, and bears the closest resemblance to the parasites of the same class occurring in man. He found that of all drugs tried, sublimate and nicotine acted most deadly on the worm; very powerful also was soda-lye, which destroys the integument of the worm. A comparatively lesser effect was obtained from the following toxic substances in the following order: cyanide of potassium, arsenite of sodium, strychnine, conine, aconitine, and morphine, while alcohol, camphor, quinine, and all acids showed no deleterious effect at all on the insect. The observations made with santonine are rather interesting, though their results are somewhat surprising. Santonine, our author says, never kills the worm, but by some unknown reason merely forces the latter from its habitat, the small intestines, whence the worm is removed

by a purge. Hence the drug does not act by its destructive but by its expelling power. Therapeutically, the inference is to be drawn from this observation that a purgative is to be given simultaneously with or immediately after the ingestion of santonine.

A CASE OF AMPUTATION AT THE HIP-JOINT IN WHICH REINJECTION OF BLOOD WAS PERFORMED AND RAPID RECOVERY TOOK PLACE.

DR. A. G. MILLER reports in the *Edinburgh Med. Journ.*, February, 1886, a case of strumous disease of the left hip-joint, with a large abscess communicating with the joint. As opening and draining the abscess only gave temporary relief, amputation of the left leg at the hip-joint was decided upon. An elastic bandage having been applied from the toes to the middle of the thigh, and a powerful elastic tourniquet at the groin, a rapid circular cut was made down to the bone in the upper third of the thigh, and the femur sawn through. A gush of blood, estimated at about four ounces, took place, and was all caught in a vessel containing a solution of phosphate of sodium. The femoral artery and some smaller vessels were then tied, and the tourniquet removed. After this a few more vessels required ligaturing, and a few ounces of blood escaped, which, however, were collected and injected along with the previous quantity into the deep femoral vein. By an incision on the outer side of the thigh the head of the femur was then dissected out. The wound was thoroughly washed out with a corrosive sublimate lotion, dusted with iodoform, brought together with sutures, and the stump wrapped up in sublimated wool. After the operation the patient suffered from no shock whatever, nor had he any depression of temperature. He made an uninterrupted and good recovery, and three weeks after the operation was able to sit up in bed. The highest temperature recorded was 100.3°. There was slight hæmaturia for two days.

The patient being in a very weak and anæmic condition before the operation, and the hemorrhage during the operation having been greater than usual, owing to the great vascularity of the parts from the extensive disease, it is very unlikely that he would have survived the shock of the operation had the greater part of the blood not been reinjected.

Dr. Duncan, who watched the hemorrhage,

and measured the blood collected and reinjected, calculates that the patient had an ultimate gain of blood after the operation. He estimates it thus :

There was pressed back into the general circulation by the elastic bandage, say 3v ; reinjected of blood measured, 3xi ; lost in sponges and sawdust, say 3iii ; lost from destruction of corpuscles, say 3i ; net gain of blood, say 3i ; but to this must be added lymph from leg, say 3v ; solution, 3iv ; and also a diminished demand on the general circulation on account of the leg having been removed.

ADONIDINE IN CARDIAC DISEASES.

It must always be difficult to find a remedy which can replace digitalis; and yet in view of the inconvenience which the constant use of digitalis entails, a drug which would combine the advantages of digitalis and would be free from its disadvantages is greatly to be desired. DR. E. DURAND (*Journ. de Méd.*, December, 1885) has made a number of comparative studies of various cardiac drugs in the hospital service of Dr. Desplats at Lille. The drugs which he has studied are digitalis, caffeine, convallarine, and adonidine. Digitalis, as is well known, is often badly tolerated, does not act immediately, and cannot be given for any length of time without danger of cumulative effects, and is not admissible in cases in which the kidneys are diseased. Caffeine, whose advantages are not yet sufficiently known to practitioners, frequently produces insomnia and a state of nervous excitement which necessitates its withdrawal. Convallarine appears to be extremely irregular in its reaction, judging by the contradictory opinions which have been published upon it. Adonidine, the active principle of *adonis vernalis*, appears to be free from bad effects, and all physicians who have heretofore employed it attribute to it properties analogous to digitalis. It increases the energy of the cardiac contractions, regulates the pulse, and diminishes its frequency. It is rapidly eliminated, and never occasions secondary action from cumulation in the organism. Finally, it increases in a marked degree the quantity of urine, and hence serves to remove dropsies and œdema. All these facts have been observed by M. Durand, with the exception that the influence on diuresis was only marked in one case, in which it doubled the quantity of urine passed in twenty-four hours. He concludes that the indications for its employment

are the same as for digitalis. The daily dose employed was $\frac{3}{10}$ of a grain in pill form. In some cases the dose was increased to $\frac{6}{10}$ without producing any phenomena of intolerance.

SALICYLATE OF LITHIUM IN RHEUMATISM.

VULPIAN read before the Paris Academy of Medicine recently a paper in which he claimed certain advantages of salicylate of lithium over the salicylate of sodium. We abstract without comment some of the principal points of his paper, as found in the *Deutsche Medicinal Zeitung* of January 14, 1886 :

In spite of the acknowledged specific influence which salicylate of sodium exercises over the rheumatic process in general, every practitioner has met cases which proved absolutely refractory to this medication. In some forms of rheumatism, such as the gonorrhœal, in the subcutaneous articular and chronic articular, the sodium salt has little if any power. In these forms the salicylate of lithium has, in the hands of Vulpian, given fair results, and proven by all means superior to the salicylate of sodium. Wherever the fibrous tissues are first and prominently affected, the lithium salt appears to act better. In some chronic cases, in which the sodium salt had been exhibited for a long time without the slightest effect, salicylate of lithium gave relief in ten to fourteen days, removing pain, swelling, and functional disturbance. Improvement was also obtained in some very advanced cases marked by semi-ankylosis and deformities. The salt is easily soluble in water, has an agreeable taste, and may be given in doses of 7 grains. The daily ingestion ought not to exceed 1 drachm. The drug is, however, by no means free from unpleasant after-effects, though patients who were treated by both the sodium and the lithium salt gave the latter the preference.

STRETCHING OF THE SCIATIC NERVE FOR SCIATICA.

DR. J. C. MEHAN reports in the *Med. and Surg. Reporter*, January 9, 1886, a case of neuralgia of the sciatic nerve in which almost every known form of treatment had been employed unsuccessfully. Morphine in injections of $\frac{1}{4}$ to $\frac{3}{8}$ of a grain had been given three times daily; quinine in large doses, injections of chloroform and ether and iron, arsenic and atropine, gelsemium, iodide of potassium, aconite, and various other drugs

had failed; massage and various liniments and blisters had been used; and under the influence of chloroform the course of the nerve had been burnt with an iron heated to a white heat. All had failed in producing any relief with the exception of morphine, and this only produced ease while its narcotic effects lasted. The operation of nerve-stretching was then done, the nerve being stretched with sufficient force to lift the lower half of the body from the table by means of grasping the nerve and lifting. The nerve was then replaced in its proper position, and the wound sewed up and carbolic acid applied. For a few days after the operation the patient suffered considerable pain, but this grew less after a short time, and he became comparatively comfortable. The wound was four weeks in healing. During this time the most pain experienced was in the knee down to the foot, but was readily bearable. When he left the hospital he had still slight pain in the nerves, but went to work in a few days. For the following six weeks he still had a little pain, which gradually left, and which since has not returned.

THE ACTIVE PRINCIPLES OF THE VARIOUS VARIETIES OF ASCLEPIADEÆ.

The family of the asclepiadæ contains numberless species, which are all poisonous, and whose specific action appears to be the production of violent vomiting and diarrhoea. The emetic properties appear to be dependent on the presence of emetin, and their preparations may be substituted for ipecacuanha. C. GRAM (*Deutsche Med. Zeitung*, January 25, 1886) has experimented with the glucoside asclepiadin, discovered by Harnack, and has found that when boiled with acids, or when evaporated out of neutral solutions over the water bath, or even when allowed to stand in the open air, it decomposes into sugar, and a substance entirely insoluble in water, brownish yellow in color, and of a resinous character, which he terms asclepiadin. This substance in frogs, after producing vomiting, soon causes total paralysis and death. Asclepiadin in frogs causes motions of vomiting and paralysis, and at first increases and then decreases reflex irritability. In warm-blooded animals asclepiadin produces arrest of respiration, and, as a consequence, irregular action of the heart and convulsions from dyspnoea. If artificial respiration is carried on, the heart becomes more regular, until death is suddenly produced through heart-paralysis.

These symptoms show a great similitude to those of emetin.

THE TREATMENT OF ALOPECIA AREATA.

DR. G. T. JACKSON publishes an interesting article in the *New York Medical Journ.* of February 20, 1886, which contains many points of value as to the treatment of this form of baldness. In the first place he points out that the hygiene of the patient should be looked after, and it will be often found that tonics are required, and of these cod-liver oil, iron, and phosphorus are the most useful.

The local treatment consists in stimulation of the scalp. In the beginning of treatment it is well to remove by epilation all the loose hairs about the margins of the patches. The best method of effecting this is by pulling the hair between the thumb and an ordinary spatula or stout card held in the hand.

For stimulants, carbolic acid, tincture of cantharides, cantharidal collodion, tincture of nux vomica, veratrine, capsicum, phosphorus, or aconite, sulphate of quinine, strychnine, liquor ammoniæ fortior, sulphur, bichloride, yellow sulphate, and oleate of mercury, croton oil, and castor oil, each and all have their advocates, and are used either separately or two or more of them combined. As the diseased scalp will bear, as a rule, a good deal more stimulation than the healthy scalp will, we must regulate the strength of our chosen stimulant solely by the amount of reaction it causes. Thus, liquor ammoniæ fortior, in full strength, may be freely applied to the scalp, and its use persisted in for weeks without apparent over-irritation of the scalp.

Good results have been reported from the use of electricity, the galvanic current being used with one pole at the nape of the neck, and the other brushed over the affected parts. Hypodermic injections of $\frac{1}{4}$ to $\frac{1}{10}$ grain of the hydrochlorate of pilocarpine every few days are well spoken of by some observers.

The treatment by blistering has in some cases produced rapid results. For this purpose either croton oil or cantharides may be used. Thus, Horand advises painting the bald spots with croton oil, covering with cotton, and wearing a hood over all. If ulceration is caused, the part is to be dressed with olive oil. When healed, the application of the croton oil is to be repeated. This method of treatment is to be continued till the hair grows. Vidal recommends the following: If the subject is a child, the whole head is to be shaved. If the patient is older, the scalp is

to be shaved for half an inch around the bald spot. Now apply a blister, which should never be larger than a twenty-five-cent piece, to each bald area, putting it on in the morning and taking it off when the epidermis begins to rise. If a large bleb forms, it should be opened. Powder the blisters with starch and cover with linen. If there are numerous bald spots, apply the blisters to them successively. If the hair does not grow after thorough blistering, repeat the operation as soon as the effects of the first application have disappeared. If blisters are not well borne, use sinapisms. When the hair begins to grow, shave, and rub in, every morning and evening, a lotion of

R Liq. ammon., 4 parts;
Alcohol, 16 parts;
Decoct. foliæ juglandis, 120 parts. M.

For alopecia areata of the face he uses blisters in some cases. Generally he has the part shaved every day and uses frictions of tincture of cantharides, either pure or with one-fifth to one-sixth tincture of rosemary.

In a few cases Dr. Jackson has produced benefit by using a pomade of jaborandi made by boiling down the fluid extract to one-half its volume, and adding this to lard in the proportion of one of the jaborandi to four of the lard. This is to be thoroughly rubbed in twice a day. In the first case of the recurrent type, the hair in two relapses returned under this treatment in the course of ten weeks. But it had no effect in preventing the formation of new patches. In the second case, occurring in a child with chorea, after the use of various other remedies for three months, the spots continually growing larger, the jaborandi was used, and in ten weeks the disease had ceased spreading, and the hair was growing on every patch. In a third case, affecting the moustache of a medical student, its use was followed in seven weeks by the appearance of new hairs in the patch, shaving being practised at the same time. In all these three cases the return of the hair took place some six or seven months after the beginning of the disease.

In his last cases of alopecia areata, Dr. Jackson has used a solution of corrosive sublimate, not on account of its parasiticide qualities, but solely for its stimulating effect. The strength of the solution used was three parts of the bichloride of mercury in one thousand parts of water, or say one grain and a half to the ounce. This was applied once or twice a day, and has given satisfactory results.

A SPECIFIC FOR THE TREATMENT OF HERNIA.

DR. DOROTEO DE ARMAS publishes an article in the *Union Médicale de Caraccas* (*Bull. Gén. de Thér.*, No. 28, 1885), in which he claims that the peasants of Venezuela produce a radical cure of hernia by means of a parasitic plant which grows on the *Bowdichia virgiloides*. The boughs of this parasitic plant are stripped of their leaves, and then scraped with a sharp instrument so as to remove all the inactive portions of the bark; the remainder is then chopped up and mixed with water to form a semi-solid paste. After the lapse of some time an extractive matter separates, which is at first greenish, but then becomes almost black. It is elastic, semi-solid, and capable of being drawn out in long filaments, which stick to the hands, and gradually harden when exposed to the air. The mode of employment is to spread a thick layer of this substance on a piece of linen, and, after having well shaved the skin, to apply it over the hernial tumor, where it is maintained from forty days to two months. Dr. Armas refers to two cases of cure with which he is himself personally acquainted. He believes that this mode of action is on the one side attributable to its contraction, and so renders it analogous in its application to a truss; and he believes, on the other hand, that it exerts special influence over the hernial rings.

THE TREATMENT OF RINGWORM OF THE SCALP.

At the last meeting of the Medical Society of the State of New York, Dr. FREDERICK C. CURTIS gave a summary of the results which followed his treatment of a number of cases of this affection. Oleate of copper was first used, but its employment was not followed by any benefit. Chrysophanic acid was next tried in a variety of ways. First, a ten per cent. solution in liquor gutta-percha was tried, as has been recommended by Dr. W. T. Alexander. The heads were shaved once a week, and, after they had been thoroughly scrubbed, this mixture was painted over the affected spots, in some cases nearly the entire scalp. It makes an impervious, dry covering or mask, liable to crack, however, and all such cracks and all loosened places received additional coats daily. A number of patients were materially benefited by this, but very few permanently, though some were cured.

Another method of applying chrysophanic acid was used by Dr. Henry Hun, of the

medical staff. After the scalp was shaved, an ointment, of the strength of a drachm and a half to the ounce, was rubbed into the spots, which were then covered with successive layers of adhesive strap. This, as might be anticipated, produced a good deal of irritation and œdema, but in no case suppuration. It was repeated two or three times at considerable intervals. Some cases were cured by it alone. It is to be recommended only for limited areas and with caution in an ointment of this strength, and it is not desirable to attempt entire destruction of the parasite with it, but to complete the cure by simple means.

Chrysophanic acid was also used, as proposed by Dr. Alexander Smith, in solution in chloroform, seven grains to the ounce. In these cases depilation was used daily, the solution being applied after it. The chloroform penetrates the hair-follicles more effectively than other agents. It produces no irritation of the scalp, and is of value. It was used only after the other appliances had been employed. It has no advantage, however, over an ointment of carbolic acid, or one of the tars with a mercurial ointment. By means of these two appliances, with depilation, all the cases not previously cured were brought to an end about the last of July, some four months after treatment of the epidemic was begun.

Dr. Curtis's conclusion is that chrysophanic acid is a reliable parasiticide, and that, combined with an impermeable covering, it will cure a fair proportion of cases without the labor of depilation, materially relieving those not cured; that it does not act by setting up a suppurative inflammation, being as to this well borne by the scalp. The impermeable covering is of very considerable value, not only as neutralizing the conditions favoring reinfection, but also by evidently hampering the growth of the fungus, if not to a degree destroying it. In none of the cases has permanent baldness resulted. It has been said that tinea capitis will finally disappear without treatment, but the natural history of the disease must be a long one; under the most fortunate treatment it will last from three to six months usually.

In regard to the exact point of time when the disease may be pronounced cured, it is often difficult, though always important, to determine. Duckworth's chloroform test, by means of which, as asserted, the hairs containing fungus are turned a distinctive white color, is not of value, since it would only be appreciable when the amount of fungus was considerable, and also since the hair is

far from normal even when the fungus is completely destroyed. The microscope is also of negative value, for it often failed to discover fungus in cases when the disease was not cured. As to the growth of healthy hair, in old cases this will not appear till long after the disease is cured. The best test is the appearance of the scalp itself. If, after one or two weeks' suspension of all treatment and washing, the cuticle is found free from the ashen-gray scales and the goose-flesh appearance, and the still bald patch is smooth, of a normal color, and free from the stumps of broken hairs, it is then safe to discharge the patient from quarantine. The entire surface of the close-cropped scalp must be searched for possible foci. Often the question will be complicated by the scaliness of slight eczema or pityriasis. But generally we can trust to this test.

URETHAN AS A HYPNOTIC.

DR. STICKER draws the following conclusions from his investigations as to the action of urethan (*Deutsche Med. Zeitung*, January 25, 1886). Urethan is an excellent cerebral hypnotic, and possesses advantages over the usual hypnotics in that it is well borne, produces absolutely no unfavorable symptoms, and causes sleep which appears to be perfectly similar to the physiological state. Urethan appears to be indicated in cases in which the other hypnotics, either on account of their unfavorable action on the heart or respiration, on account of their taste, or for some idiosyncrasy of the patient, have to be reduced or stopped. The minimum dose is 15 grains, but in persons from fifteen years of age and upwards this may be increased to 60 grains without danger. The best mode of administration is in capsules or in watery solutions, with some syrup to correct the taste.

THE TREATMENT OF INCONTINENCE OF URINE IN CHILDREN.

There is scarcely any disease occurring among children more annoying and troublesome than incontinence of urine. It is particularly vexatious to parents, and is often regarded by them as an incurable infirmity. After their patience has been long tried, they abandon one remedy after another and look forward to puberty, when, they are told, the disease may depart, never to recur. According to Dr. DAY (*Brit. Med. Journ.*, February 13, 1886), failure in treatment is frequently

owing to an erroneous diagnosis of the affection; to the inefficiency with which the treatment is carried out; to its being discontinued too soon. Among the causes of enuresis, the following may be enumerated. If the urine be excessively acid or loaded with urates, the bladder becomes overstimulated and readily discharges its contents; if the bowels be habitually costive, or there be worms in the intestines, vesical irritation may ensue; or, if the child be guilty of masturbation, there will be no chance of cure till the habit is corrected. Weakness of the muscular coat of the bladder from general debility or anæmia is a very common cause; the bladder, not being able to tolerate any quantity of urine, readily excites the motor apparatus. Dr. Day has known a troublesome case follow typhoid fever in a boy ten years of age. If the disease be owing to a long prepuce, causing phimosis, it should be removed. Sometimes no cause can be ascertained. Children two or three years of age frequently wet the bed, either from laziness or from lack of control over the bladder. It is important to remember that, even though the secretions are in perfect order, the incontinence may continue, and thus a habit may be formed which the poorer classes and stern people occasionally endeavor to correct by punishment. In some idle and dirty children such a course may be of benefit; but in others who are nervous and timid there is the possibility of increasing the evil we desire to remove.

Enuresis is sometimes seen in connection with chronic albuminuria, and is occasionally so persistent as to require special treatment. It seems impossible to lay down a plan of treatment for general adoption; the peculiarities of constitution and habits of life must be taken into consideration, and hap-hazard treatment guarded against. Some cases are cured or relieved by the combined influence of electricity, iron, and belladonna. The successful issue is in a great measure attributable to the constant care which the mother takes in feeding the child and rigorously attending to the physician's instructions. Those cases that date from birth or have lasted upwards of a year are invariably intractable and often incurable, especially if the child be of nervous parentage, or was delicate when born, or passes large quantities of urine. With respect to the utility of faradism there can be no question; it requires to be used regularly, and to be continued for a considerable time, but it sometimes fails altogether. When the nervous system is weak, and there is gen-

eral debility, the sphincter loses its power, and urine escapes by night and day without the child's knowledge. It is in such cases as these that iron and *nux vomica* are of service.

If there be excess of muscular action, and the child have frequent inclination without power of control, belladonna is an admirable remedy. It occupies a prominent place as a therapeutic agent, and sometimes, when combined with iron, even in small doses, it seems to do good; but it should not be given up in obstinate cases, till either soreness of the throat is produced or dilatation of the pupils takes place. In Dr. Day's hands it has often failed when administered in any form or dose. It certainly tends to lessen irritability of the bladder, and should always have a fair trial.

Cold sponging in the morning is very serviceable in cases of enuresis that appear to have their origin in general debility. It braces up the nervous system and is a powerful tonic. The slight sensation of chilliness soon passes away without leaving any depression if vigorous friction with a towel be employed for a few minutes. In a case under Dr. Day's care about three years ago, the cure was attributed to this simple measure when one remedy after another had failed. The vital functions are brought into a healthier state, the skin acts better, and the appetite and digestion improve. However delicate a child may be, free sponging in tepid water, followed by a good rubbing, is of great value.

THE TREATMENT OF EPILEPSY WITH BORAX.

Although there are many remedies suggested for the treatment of epilepsy, the number from which any permanent benefit is derived is exceedingly small,—so small that probably few physicians think of prescribing anything but some of the preparations of the bromides, unless they have already been tried and failed. It is true that some benefit is the usual result of the use of the bromides, often marked improvement, sometimes cures. But their use is attended with disadvantages, if given in sufficient quantity to control the attacks, in the vast majority of cases; and with certain individuals these common uncomfortable symptoms are so excessive as to make the bromides, when taken for a long time, a greater source of annoyance than the convulsions themselves. There are some cases, also, in which no benefit is derived from the bromides in any possible combination of their salts, or whether with ergot, bella-

donna, ammonia, and other drugs, or alone ; it now and then happens that they make the disease worse, and exceptionally they give rise to maniacal symptoms. It is not seldom that they cannot be used.

Their common effect is to impair appetite, interfere with digestion, and produce a certain amount of mental and physical sluggishness, which may amount to a settled gloom and indisposition to effort, and which is generally attended with some loss of flesh, even if not great, unless some tonics are given, or special efforts are made to keep up the general health ; and, if given to the extent of controlling the convulsions, the bromidism produced is often so disagreeable to the patient that other remedies must be sought for. The list of drugs which have been tried in such cases is long.

In the *Boston Med. and Surg. Journ.*, February 18, 1886, DR. CHARLES F. FOLSOM calls attention to the use of borax, and reports cases in which the use of borax, commencing with 10 grains three times a day, and then increasing up to 15 grains, finally to 20 grains three times a day, served to greatly reduce the number of convulsions, even although nearly all the other methods of treatment had proved unavailing. In other ways the improvement was also great : the attacks of petit mal, which formerly were almost incessant, occurring sometimes twenty in a single hour, are now very seldom the source of annoyance, while the general health is almost perfect. The only annoyance noticed was a dry, scaly eruption, giving rise to a good deal of itching, but which disappeared after several weeks' use of arsenic internally and oxide of zinc ointment with vaseline given externally. Aromatic tinctures given with the borax prevented the nausea which immediately followed its use when mixed with water alone. Borax cannot be claimed ever to cure absolutely cases of epilepsy in which the bromides have failed, but it nearly always will produce improvement in the general health and will lessen the severity and frequency of the convulsions. Dr. Folsom especially recommends the alternate use of borax and bromides, particularly in cases which have been for a long time under the influence of the bromides, and which are therefore in the wretched condition nearly always caused by prolonged use of these drugs. The first few doses of borax often produce diarrhoea, which soon ceases. Eruption on the skin is readily controlled, and the tendency to nausea, flatulency, and indigestion is easily met by chloroform, tinc-

ture of cardamom, compound spirits of lavender, etc., given with the borax.

THE PREPARATION OF TERPINE.

We have already published reports as to the action of terpine as an expectorant. The following formula is given for its preparation (*Pharm. Post*, January 23, 1886) : Rectified oil of turpentine 4 quarts, alcohol (80°) 3 quarts, nitric acid 1 quart. This mixture is placed in a flat porcelain vessel, and allowed to stand for several days. The crystals, which by this time have formed, are dried by pressure between layers of filter-paper, and are again crystallized out of 95° alcohol, by which means the nitric acid, which is still clinging to the terpine, is separated. About twelve per cent. of the turpentine employed is obtained as terpine.

THE NEUROTIC TREATMENT OF CATARRH.

At the meeting of the Harveian Society of London held February 4, DR. LEES read a paper with the above title (*British Medical Journal*, February 13, 1886).

Dr. Lees limited the word catarrh in his paper to its original meaning of coryza, and pointed out the many troublesome and even disastrous results which might ensue from a neglected cold, and the unsatisfactory nature of a merely diaphoretic treatment. He defined catarrh as a neurosis of the vaso-motor nerves, excited in a reflex manner by impressions of cold on the cutaneous nerves. He pointed out that congestion and hyperæsthesia of the nasal mucous membrane was a result of this vaso-motor paralysis, and that, conversely, there were reasons for thinking that a morbid irritability of this part might itself excite catarrh, an illustration of this latter process being found in hay-asthma. The question of the origin of catarrh from germs was considered, and the arguments in its favor stated, including the undoubted contagiousness of some colds and the analogy of such diseases as influenza, measles, and whooping-cough. But to ascribe all catarrhs to germs was premature and probably incorrect. Catarrh being a neurosis, relief must be sought by the aid of neurotic remedies. The indications for treatment were three : to quiet the excitement of the central nervous system, to soothe the local congestion and hyperæsthesia of the nasal mucous membrane, and to arrest the flux if it had already commenced.

The first indication was to some extent met by opium, but much more satisfactorily by a full dose of bromide of potassium, and this drug had the further advantage of great safety. The second object was easily accomplished by painting the interior of the nose with solution of hydrochlorate of cocaine. The arrest of the flux was to be accomplished by the administration of belladonna, a drug whose first obvious physiological action was to cause dryness of the mouth and throat. The author had found the following method promptly and permanently successful in cutting short a cold. From 40 to 60 grains of bromide of potassium were given at once, the dose being repeated in six hours, and again, if necessary, six hours later; and 20 drops, equal to 15 minims, of tincture of belladonna were also given every hour, or every two hours, until the throat felt a little dry. Painting the nasal mucous membrane with a four per cent. cocaine solution gave great relief, and might even by itself suffice to arrest a cold. Dr. Lees concluded with the account of a case in which 10 grains of bromide of potassium, with 8 minims of tincture of belladonna, had in less than forty-eight hours completely arrested a very pronounced nasal and pulmonary catarrh, with much dyspnoea, in a highly rickety child aged 4, whose chest was much deformed; and he suggested that, from the known danger of this condition in such children, it was not improbable that in this instance a life had been saved by the adoption of a neurotic treatment of catarrh.

*AMPUTATION OF THE THIGH UNDER
THE USE OF COCAINE AS AN AN-
ÆSTHETIC.*

DR. T. R. VARICK reports in the *New York Medical Journ.*, February 20, 1886, the first attempt at a major operation in which Dr. Corning's method, already referred to in the GAZETTE, was employed to produce anæsthesia with cocaine. The case was one of compound fracture of the right leg, in which, after a period of five weeks, all attempts at saving the limb having proved abortive, amputation was decided upon. An attempt to administer ether was attended with such alarming symptoms that it was abandoned.

The operation by antero-posterior flaps was the one chosen, cutting from without inward for the interior, then transfixing the limb, and making the posterior flap by cutting from within outward.

1. The first incision through the integument—no pain.

2. The second incision through the deeper tissues to the bone—no pain.

3. Transfixion of the limb—no pain.

4. No pain until near the completion of the wound, which was occasioned by carrying the knife beyond the line marked on the integument.

5. On carrying the knife around the bone to divide a few remaining attachments, there were some manifestations of pain.

6. The use of the saw occasioned loud complaints, although the subsequent removal of a spiculum with the bone-forceps was not noticed.

7. There appearing some redundancy of flap, the scissors were used for the purpose of trimming. This procedure was absolutely painless.

8. The insertion of sutures was unnoticed, except at the angles of the wound.

After the ligation of the vessels, which was painless, hot water, slightly below the boiling-point, was applied to the abraded surface, with no expression of pain.

Reviews.

ACNE: ITS ETIOLOGY, PATHOLOGY, AND TREATMENT.

By L. Duncan Bulkley, M.D.

New York and London: G. P. Putnam's Sons, 1885. Pp. 280.

The author well says, "The science and practice of medicine is built upon the study of single diseases and groups of diseases, and monographs may be called the foundation-stones upon which the structure is reared, or the quarries from which the material is drawn." And the monograph here presented is another of Dr. Bulkley's contributions, fully as valuable as his monograph on eczema. The title of the book, however, will be misleading, as the inference follows that it treats only of the disease commonly known as "acne." On the contrary, several other important diseases, among which may be mentioned that known as seborrhœa—in short, the functional and inflammatory diseases of the sebaceous glands—are here treated, and comprised under the one general term. That this is theoretically justified we may possibly admit, but we must nevertheless look upon it as confusing, as it is not in accord with the prevalent teachings of the day. The substance of the work, however, is valuable in every respect, and it will

prove an acceptable addition to the library of general practitioners, and also to specialists.

All the diseases considered—namely, those usually described as seborrhœa, comedo, milium, sebaceous cyst, acne vulgaris, and acne rosacea—are handled in the author's clear style, and the treatment of the different affections is full and intelligible. Dr. Bulkley not only mentions what remedies to use, but how and when to use them.

The author states, in considering the subject of etiology, "but the more the subject is studied in all its bearings, the more does it seem probable that in the majority of instances the direct cause of faulty secretion from, and congestive and inflammatory action in and about, the sebaceous glands is found in a nerve-influence transmitted or reflected from other organs or portions of the body." A chapter on diet and hygiene in relation to the diseases here considered is added.

The same plan is followed in regard to the formulæ given as in the author's work on eczema: the formulæ are added in a supplementary chapter, and omitted from the body of the work, reference being made to them by numbers. This plan, it is true, saves a slight amount of space, as many would necessarily be repeated, but it detracts from the smooth and easy reading of the book.

Apparently the bibliography which is added is complete, and, although of little interest to the general reader, is valuable to the cutaneous specialist.

In conclusion, we congratulate the author on the production of a second monograph that will add still more to his present well-earned distinction.

ECTANEUS MEMORANDA. By Henry G. Piffard, M.D.
Third Edition.

New York: William Wood & Company. 1885.
Pp. 267.

As long as there is demand for such books as the "pocket manuals" there will be a supply; and that there is a demand is proved by the appearance of a third edition of the little book before us. As is to be expected from all writings emanating from Dr. Piffard, this volume contains much practical information, and it is given in the author's usual positive style. In the present edition additional text and some new illustrations have been added.

OFFICIAL FORMULÆ OF AMERICAN HOSPITALS. Collected and Arranged by C. F. Taylor, M.D.
Philadelphia: Published by *The Medical World*.

This little volume meets a recognized want. On the part of druggists especially, into whose

precincts occasionally stray patients from hospital out-wards and dispensaries with prescriptions calling vaguely for some Mixture No. 2, *Mixtura Anti-Rheumatica*, or some equally perplexing combination. To such the book will prove a godsend; also to the young practitioner who has a sharp appetite for formulæ, and believes that the physician's province is to cure. Incidentally, it will be serviceable to the numerous class of aspirants who are engaged in starting new dispensaries, so that the poor can receive gratuitous advice, and make the acquaintance of a few skilful gentlemen whose time is a drag on their hands.

The number of hospitals represented is not very large, and some institutions of note contribute very few formulæ, but among them all one meets occasionally a new combination, and that is something at the present day, when there is so little new under the sun.

RATIONALISM IN MEDICAL TREATMENT, OR THE RESTORATION OF CHEMISM, THE SYSTEM OF THE FUTURE.
By Wm. Thornton.

Boston: Published by the author, 1885.

"To those who think and reason" this work is dedicated, and it may, perhaps, appeal to those who cannot think and whose reason is overthrown. Each leaf is printed on but one side of its heavy tinted paper, lest perchance its precious truths should strike through and damage some equally precious truths on the reverse page. The author speaks of an atmosphere of invective and air that has to clear away before his great discovery can burst upon us; but, after reading the book through with expectation, we find nothing; in fact, he has reserved the revelation of his great discovery for a subsequent volume. The fact that "no book can aid in the development of rational medicine, renders it necessary that he," being the authority, should "begin to open this vista through which others may see." A lovely metaphor, but erroneous, the author imagining a "vista" to be something like a telescope or a peep-hole. Throughout the book we find the word "death" quoted continually, which seemed unaccountable till near the end in the chapter on the lucid topic of "Life, Material, and Death," we learn that there is *no* such thing as "death," and his perpetual quotations are but his quiet protest against an idea for which he will not be held responsible. His idea, the idea that we gather from the book, is that disease arises from a withdrawal of some one or more of the normal chemical elements of the living body, that its cure can only be effected by refurnish-

ing it again with these diminished or absent elements. The style is intricate, the expression clumsy. Yet at times he rises to something like eloquence, almost Socratic, as where he asks, very pertinently, "What are we to understand by this?" and in a line more, as though Bunsby himself were risen from the second volume of "Dombey & Son," "*Be* that as it may, what answer?" At times sententious, as "The body is not composed of drugs but chemicals," "A man cannot live on crude chemicals," "The body is crude chemical matter clothed in flesh." Still, he cannot hide the fact that he is grossly ignorant of medical science in all its branches, and that he has as yet no grand truth of his own discovery to reveal. The reader will be apt to add mentally that the chances of his ever discovering or revealing anything valuable are very small judged by "Rationalism in Medicine, or the Restoration of Chemism."

EPITOME OF DISEASES OF THE SKIN. By Louis A. Duhring, M.D.
Philadelphia: J. B. Lippincott Company, 1886.
Pp. 130.

This little book is an abstract of lectures delivered before the graduating class of the University of Pennsylvania. The various diseases are described intelligently but briefly, practical points of treatment given, and some of the more important formulæ incorporated. Although the volume is, as the author states, to be regarded merely "as an epitome of the subject," yet the general practitioner and student can find in its pages much that is valuable and suggestive.

VENEREAL MEMORANDA: A MANUAL FOR THE STUDENT AND PRACTITIONER. By P. A. Morrow, A.M., M.D., etc.
New York: Wm. Wood & Co., 1885.

The author's aim is to "boil down" the existing literature on venereal diseases, to give us a real pocket manual, and to fix the main points in the mind by brevity and terseness of expression. We think he has succeeded admirably. His formulæ are time-honored as well as modern, his recommendations are sound, and the advice to the practitioner reliable.

BACTERIOLOGICAL DIAGNOSTICS. By James Eisenberg.
Hamburg and Leipzig: Leopold Voss, 1886.

There are many physicians both in America and in Europe who do not believe in the microbic theory of disease. Some physicians go even as far as to regard the entire subject and its promulgators fallacious, while the latter

view the parasitic etiology of all constitutional diseases as *un fait accompli*.

The truth, as always, lies probably in the middle. Some, but as yet undefined, relation appears to exist between disease and microbe, though it remains to be proven that the latter is always or the only etiological factor.

Meanwhile, the bacteriological science is making rapid and unexpected strides forward, and imposes upon the intelligent physicians of the world the necessity of making themselves acquainted, *volens volens*, with this new and certainly interesting subject. The pilgrims to Koch's laboratory—the Mecca of bacteriology—are numerous, and nowhere can a scientific building boast of a more international character than the gray old "Reichsgesundheitsamt." Occasionally the foreign pupils take a hand, even at original researches and publication, as is the case with Dr. James Eisenberg, who has just published a pamphlet called "Bacteriological Diagnostics." The little work is a ready hand-book and medium of reference for the bacteriological science up to its present development. It is divided into three parts:

- I. Non-pathogenetic bacteria.
 - a. Rendering gelatin fluid.
 - β. Not rendering gelatin fluid.
- II. Pathogenetic bacteria.
 - a. Cultivated outside of the animal economy.
 - β. Not yet cultivated outside of the animal economy.
- III. Micrococci.

Altogether, we find seventy-six different species of microbes discussed both morphologically and in their relations to disease. To gain an insight into the nature of these reference-tables, for such they actually are, we find the microbes discussed under the following columns: Habitat, name, discoverer, literature, motility, growth (plates, puncture culture, potatoes, blood serum), temperature, rapidity of growth, formation of spores, need of air, gas formation, relation to gelatin, coloration, pathogenetic relations.

The work, which is dedicated to Prof. Koch, and which, as we understand, is being translated into English by Prudden, of New York, deserves a favorable recommendation.

HOSPITAL SISTERS AND THEIR DUTIES. By Eva C. E. Lückes, Matron to the London Hospital.
Philadelphia: P. Blakiston, Son & Co., 1886.

To those aspiring to become hospital sisters this book will be invaluable. Its advice from the writer's stand-point is excellent. Nothing

is too trivial or minute for mention. The system of nursing is everything, and pervades everything. The hospital is but the field appointed for its perfect evolution. Sisters and probationers, nurses and night sisters, staff nurses and ward maids,—these are the shining bodies that make up the system, and if on the outskirts there revolve more distant ponderous and dismal bodies, far from light, these perchance are doctors, and the nearer orbs regard them not. This is the story of the book. Nurses are a necessity, good nurses are treasures beyond price; but surely human beings do not fall sick solely that the system of nursing should be exhibited; wards are not built and filled with sick and injured that nurses may have a field. A very short and hurried perusal of these pages will convince all but the most wrong-headed of the very undesirable state of things which it holds up for our admiration. One asks in astonishment, Where in this scheme does the doctor come in? True, he is hinted at vaguely, as on p. 125, "The responsibility of deciding whether the condition of the patient renders it desirable for his name to be added to the 'dangerous list' does not finally rest with the sisters, but this is nevertheless a matter," etc. True, we occasionally find something better, as "to help the doctor, not to add to his difficulties, is the object a hospital sister has to keep in view;" but more often he floats in the vague distance, while the foreground is filled with the small bustle of ward, ward kitchen, and scullery. So that, while there is much of value in the book, much that tends to help the nurse, we would be sorry to see the whole system as here exhibited firmly rooted and flourishing on our own soil.

POST-MORTEM EXAMINATIONS WITH ESPECIAL REFERENCE TO MEDICO-LEGAL PRACTICE. By Professor Rudolph Virchow. Translated by J. P. Smith, M.D. With additional notes and new plates. From the Fourth German Edition.

Philadelphia: P. Blakiston, Son & Co., 1885.

This exceedingly useful book may well drive all other similar works from the field. Nothing more practical, minute, systematic, and intelligible has ever appeared in print upon the subject. The smallest matters receive due attention, and care and method are inculcated on every page. The book is well illustrated, convenient in size, and printed in clear, readable type. To its production have been brought all the traditions and observations of the most careful, minute, and painstaking school of medicine in the world, and we cordially recommend it to all those who desire to

become truly proficient in the important matter of post-mortem research.

TRANSACTIONS OF THE STATE MEDICAL SOCIETY OF WISCONSIN, 1885.

TRANSACTIONS OF THE MEDICO-CHIRURGICAL FACULTY OF THE STATE OF MARYLAND, 1885.

The address of the president of the Wisconsin State Medical Society, subject, "Fraternally Yours," forms the most interesting portion of the Transactions. Throughout runs a vein of barely concealed sarcasm. In relation to professional good feeling, "Fraternally Yours" would meet the author's views of the real state of things most exactly. And in support of this term we find long quotations from the code of the American Institute of Homœopathy, showing what liberal fellows they are; how they have our books on their shelves, our code or a better one in their hearts; how they are now free from any taint of dogma, and are ready and willing to consult with us whenever and wherever we please. We do not wonder at finding in the report of transacted business that the Society reaffirms its steadfast adherence to the code of ethics, and that the president desired to "modify certain portions of his address." As for the medical work of the Society, the Transactions of State societies are seldom used in our medical schools as text-books.

The Transactions of the Maryland Society contain much interesting matter. The president's address on "The Origin and Diffusion of Cholera" is a careful résumé of the subject. The annual address, by Dr. H. Newell Martin, on "The Study of the Physiological Action of Drugs," is a bright, thoughtful, and valuable paper. Under the section of Obstetrics and Gynecology we have an extended notice of a modification of the Tarnier forceps, well illustrated. There are papers on "Antipyrine," on the "Tonic Effects of Travel," on "Cremation," "Cocaine," "Insanity," "Rectal Medication," and many other interesting topics, forming a volume very creditable to the efforts of the Society, showing, as it does, patient research and faithful work.

Correspondence.

THE TREATMENT OF DIPHTHERIA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—With all deference to you in other matters, I disagree with your views on diphtheria as stated in February number

of the GAZETTE. Let me repeat your own words, which I divide into three propositions :

"1. That all therapeutic interferences at present employed in diphtheria play little more than a palliative rôle, without in any way modifying the diphtheritic process itself, is unfortunately an undisputable fact with all clinicians and practitioners.

"2. To look for new remedies of the vegetable or mineral kingdom, or the products of the chemical laboratory, which might possibly exert a specific, or, at least, salutary influence over the affection, must at last prove a fruitless endeavor.

"3. Drugs do not and cannot cure diphtheria, and other measures must be thought of, unless we wish to abandon our patients wholly to the mercy of this dreaded foe."

I cannot accept these views. If I could I would cease practising medicine. I believe with Coleridge, that "in fact all medicines will be found specific in the perfection of the science."

I do not ask you to believe me, or to believe one hundred credible witnesses whom I could produce to attest it, but *I offer to demonstrate to you* at the bedside that the following is true of diphtheria in this section of country :

1. Diphtheria is at first a local disease in at least ninety-nine per cent. of cases. (In some two hundred cases observed I saw no exception.)

2. This local stage has a distinct duration of from twenty-four to seventy-two hours before stenosis or sepsis supervene.

3. No matter how malignant the outbreak, occurring uncomplicated in previously healthy subjects, every case can be speedily arrested and cured in this stage by "therapeutic (and hygienic) interferences."

4. The same means will save to the uttermost in the septic stage.

Yours fraternally,

T. J. HUTTON.

P.S.—As to the phrase "no matter how malignant," this may explain much of our difference of opinion. It may be that I have not seen the disease in its most malignant form here, for my experience with this malady is limited to this section. I have never known of more than eight children dying in one family during one outbreak here.

T. J. H.

[Although perhaps not as clearly expressed as might be, we thought we had succeeded in

making evident that the intent of the editorial, which is criticised in this letter, in stating that drugs cannot and do not cure diphtheria, is to refer to their internal administration. This intent is shown by the fact that the chief object of the editorial was to call attention to the importance of local medication in diphtheria. With this explanation, we still uphold the assertions of our editorial. Calomel may, of course, aid in curing diphtheria by removing or subduing the local inflammation; but it is the only drug which in our opinion has the slightest effect in curing diphtheria. All other remedies which are properly used in the disease simply help to keep the patient alive until nature succeeds in throwing off the disease. We believe that in the majority of cases diphtheria is a local affection, and that the local application may exert a direct curative effect. Especially has this seemed to us true of Monsel's solution. After all, however, in malignant cases the best local remedies have usually failed in reaching and directly affecting the parts, and therefore in killing the organism which we believe to be the cause of the disease. We must add, however, that we have never, as the result of our lack of faith in drugs, had a mortality of eight children in one family, perhaps thus showing that we have not met with the disease in its malignant form.—Eds.]

BERLIN.

(From our Special Correspondent.)

THERAPEUTIC NOTES FROM THE CHARITÉ
(the Berlin University Hospital)—*HENOCH ON*
THE TREATMENT OF NEPHRITIS AND
URÆMIA IN CHILDREN—THE TREAT-
MENT OF DIPHTHERIA BY THE GAL-
VANO-CAUTERY.

The absence of any uniformly-adopted treatment in nephritis and uræmia in children, and the fact that every clinician has his own therapeutic measures, illustrates well the inferiority of our art to the *vis natura*.

The detection of albumen in the urine is an imperative admonition to put the child at once to bed, and to order a rigid diet, consisting chiefly of milk and bouillon. Meat, which strangely enough is directly recommended by some physicians, is positively injurious in every inflammatory condition of the kidneys. Unless diarrhœa be present, Henoch initiates the treatment with the following purgative, which he continues for two to three days :

R Pulv. hydr. mitis, gr. ivss;
Sacchari albi, ʒi. M.

S.—Div. in chart. No. x., 1 powder every two hours.

In presence of diarrhœa the expectant treatment is advisable, for spontaneous healing of the nephritic process, simultaneously with the stoppage of the diarrhœa, frequently occurs after the use of bismuth and astringent enemata. After the above purge, Henoch orders Wildungen water to be drank copiously, and prescribes the following :

R Pot. acet., gr. xxx to xlv;
Aq. dest., fʒiii;
Syr. simpl., fʒvi. M.

S.—A dessertspoonful every two hours.

In very feeble and anæmic children the following combination is highly serviceable :

R Decocti cort. chinæ, fʒiii;
Pot. acet., gr. xlv;
Syr. cort. aurant., fʒvi. M.

S.—Dessertspoonful every two hours.

In numerous cases, with or without fever, digitalis may be exhibited with satisfactory results in the following manner :

R Infus. fol. digital., fʒiii;
Sodii nitr., or pot. nitr., or pot. acet., gr. xxx;
Syr. simpl., fʒvi. M.

S.—1 dessertspoonful every two hours.

From all these remedies, Henoch claims that he has never witnessed any unfavorable or irritating influence upon the kidneys. The potassium salt, though, ought not to be exhibited in too large a dose.

The employment of dry or wet cups over the renal regions will but rarely be called for, and only in cases in which urination is scanty or absent and considerable fever coexists. It is well known that venesection is at present a proscribed measure, but Henoch feels confident that he has sacrificed many a child by subscribing to the hæmophobic fashion of the day. Heim and Romberg recommended as the best "diuretic" in renal affections the abstraction of a cupful of blood; and, as assistant of the latter physician, Henoch states that he saw many a case, complicated with inflammation of internal organs, improving, which the modern therapist might have lost. But the majority of grave cases contraindicate venesection, and even wet cups, on account of the existing anæmia. Dry cupping may be tried, but it will probably not prove of great service.

Many physicians urge the employment of

warm baths and subsequent enveloping of the child in woollen blankets. Provided the intended powerful diuresis actually takes place, the baths have been very successful in Henoch's hands. In marked œdema, however, the diaphoresis will be either wholly absent or be very scanty, and even in absence of dropsy the baths proved a failure in quite a number of cases. In some cases of hemorrhagic nephritis an increase of the blood in the urine may even be noticed after each bath, so that they may have to be discontinued. Hence the bath can only be regarded as a trial-measure, the effect of which is to be watched for; still, the trial ought to be made even in complicated cases. In pneumonia their continued use has often led to good results. The hydropathic packing or compress, as exhibited so successfully in respiratory affections, appears of no service in kidney-lesions.

Now a word or two about pilocarpine, the fashionable remedy of the day, introduced by Demme, and praised so highly by many physicians. Henoch says he cannot join the eulogizers of this remedy, and has at present wholly abandoned its use. In order to get its diaphoretic effects it was often found necessary to push the dose up to $\frac{1}{10}$ and $\frac{1}{8}$ gr. (for hypodermic use), and vomiting and even threatening collapse were frequently observed. In a number of cases the pronounced depression of the cardiac energy forces the abrupt stopping of the pilocarpine injections. It is fair, however, to add that in some other cases, in which the injections could be continued with impunity for a week and longer and produce no diaphoresis, the dropsy was decreased, and the quantity of urine increased; its albuminous contents remained, nevertheless, stationary. In general, however, Henoch far prefers the warm bath as an equally potent and less dangerous medium of diaphoresis.

If these remedies do not occasion any improvement within a fortnight, astringents have to be tried,—tannic acid, or, if the urine shows considerable blood, ergotine. The latter remedy may be prescribed in the following formula :

R Extr. secal. cornut. aq., gr. xv;
Aq. dest., fʒiii;
Syr. simpl., fʒvi. M.

S.—A dessertspoonful every two hours.

If in a week the condition of the patient has not improved, the preparations of iron are indicated, especially in the hæmorrhagic form, but also in view of the anæmia invariably remaining behind after the completed cure. Henoch orders :

R Liq. ferri sesqui chlor., fʒiv;
Aq. dest., fʒiii;
Syr. simpl., fʒvi. M.

S.—Four times daily a dessertspoonful.

Still, all the above mentioned remedies cannot be regarded as prompt and quickly acting. Many weeks often pass, in spite of their continual exhibition, before a cure is wrought. Intercurrent uræmia calls for a great differentiation in the cases to be treated. The patients will be found to belong to either of two classes,—viz., the sthenic or asthenic,—either one of which requires a wholly different if not diametrically opposed treatment. In the former type of uræmia, where we deal with a vascular orgasm, the antiphlogistic treatment is quite in its place, while in the latter the cardiac weakness calls for stimulation of the system. Hence, in the sthenic type of uræmia, abstraction of blood (wet cups to the neck, six leeches on the temples or behind the ear), the ice-bag and a strong purge are called for, as follows :

R Infus. sennæ co., fʒi.

S.—A dessertspoonful every two hours.

If this purge be vomited, enemata, consisting of equal parts of vinegar and water, will be found useful. Great intensity and duration of uræmic convulsions may call occasionally for chloroform inhalations. But the onset of collapse symptoms (pallor of face, small, irregular pulse, coolness of the extremities) renders the immediate hypodermic exhibition of alcohol and camphor necessary.* The formula for the camphor injection is :

R Camphoræ, gr. ix;
Spir. vini,
Aque dest., ℥℥ ℥ lxxx. M.
S.—For hypod. use.

Henoch often also gives camphor by the mouth or by the rectum, and combines it with benzoine.

Following the recommendation of Pretorius, Henoch tried pilocarpine in nephritic uræmia, but lost the greater majority of cases under this treatment. Only three cases, where doses of $\frac{1}{100}$ to $\frac{1}{10}$ gr. were injected twice daily, recuperated after a copious diaphoresis.

In cases of what might be called artificial nephritis,—i.e., such as result from the injudicious use of medicine,—a somewhat different and chiefly symptomatic treatment is indicated. Henoch has seen such a nephritis

arising from turpentine, cantharides, tar, Peru balsam, tincture of iodine (one case of painting large surfaces four times daily), and carbolic acid (one case).

A syphilitic base may also be occasionally underlying a nephritic process, and of course must then be considered in the treatment.

Your correspondent was asked to assist at the first case of diphtheria treated in Berlin by galvano-cauterization. Following the instructions of Dr. Bloebaum, of Koblenz, Prof. Henoch was willing to give the new treatment a trial, and on the 9th of February applied the galvano-cautery to tonsils and pharynx of a diphtheritic child. "Though I think favorably of the cauterization plan," said Prof. Henoch to your correspondent, "I think Dr. Bloebaum's views require some restriction. In the first place, we are fully aware of the impossibility of executing this cauterization without chloroform, and then I can regard this cauterization only serviceable if executed during the first or first two days after the diphtheritic infection is established. If the pathogenetic microbes have once found their way to the circulation, and have there caused a deterioration or decomposition, I cannot see that even the local pharyngeal improvement—and this, of course, we obtain at all events—would save the child's life."

The child, about 7 years of age, was put completely under the influence of chloroform (ether is almost never used in Germany), the jaws separated by a screw-dilator, and the cauterizer applied three times,—one on each tonsil and once on the pharynx.

The child cauterized in the first week of February by Prof. Henoch for diphtheria is at present, ten days after the cauterization, in an improving condition. The aspect of the pharynx presented to your correspondent only a traumatic nature without a trace of any septic process. Unfortunately, a phlegmonous condition of a submaxillary gland keeps the fever high, so that it is as yet impossible to predict the termination of the case, though a favorable one is rather to be anticipated. The case does not seem to have been very suitable for the cauterization, as about six days had elapsed before the child was presented for treatment. It is probable, however, that only during the first few days of the diphtheritic infection can definite favorable results be expected from the galvanic cauterization.

The story of the "boycotted professor," Dr. Schweninger, has no doubt reached you by this time. It sounds like a little novel, of which the outlines are about as follows : Prof.

* The combined hypodermic use of camphor and strychnine was tried by Henoch in the first week of February, 1886, and found to act well.

Oertel, of Munich, after a decade's hard study, constructs a thoroughly scientific method of divesting the system of an undesirable surplus of fat. Dr. Schweninger, hitherto wholly unknown in the medical world, annexes Oertel's cure as his, and loudly blows his "anti-fat horn." Bismarck, the mighty and weighty chancellor of the empire, consults Schweninger, and, by strict subjection to his orders, actually gets cured of his *embonpoint*. Next in order comes the appointment of Schweninger to a newly and especially created chair of dermatology at the University of Berlin. But, unfortunately, the moral credentials of Schweninger were not acceptable to the Berlin faculty; for Schweninger had been caught in *actu cœundi cum femina in sepulchro maris ipsius*, and punished for this unspeakable crime. But Bismarck's dictatorial word soon subjected the refractory faculty, and Schweninger got his chair, though he is shunned and virtually boycotted by every professor and instructor.

BISMUTH IN INFLAMMATIONS OF THE MUCOUS MEMBRANES.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your February number (in leading article) my attention was called to an article, "Bismuth Preparations," especially their use in inflammations of mucous membranes. Although limited, my experience with the drug has been satisfactory in all cases in which I have had occasion to use it, and in my opinion no other drug can take the place of it in mucous inflammations. But there is one preparation or combination I would like to call the attention of your readers to that I consider the best; it is the elixir of bismuth and hydrastia for cholera infantum. In first stage it is excellent, and I have found it valuable throughout the disease. And in gonorrhœa I have found it invaluable, with a few grains of sulphate of zinc. I first used it last summer in a case of gonorrhœa that had baffled me in every way; I first used it alone, then in combination with the zinc, with the most happy results. It is cooling, and does not cause any pain, simply coating over the mucous surface of the urethra, and allaying that burning sensation caused by urinating. Have also used it with some success in gleet. I should also state that I have it used just after urinating. Trusting this may be of some benefit to some of your readers,

I remain yours, etc.,

G. W. WHITELEY.

ALBANY, MO., February 26, 1886.

Notes and Queries.

NOTES FROM THE CLINIC OF PROF. J. M. DA COSTA, M.D., OF PHILADELPHIA, AT THE PENNSYLVANIA HOSPITAL.

Contracted Kidney—Œdema of the Lungs.—

This case is that of a woman who presents a family history that seems to have a very decided tendency towards heart-disease. Indeed, if we can believe her story, her mother died of heart-disease, as did also all her brothers and sisters. They all suffered from dropsy, she says; but it is by no means sure that we can accept the history she gives. From her own history we glean that she has been always delicate throughout life, never robust and strong. Even in childhood she had rheumatism, and this has haunted her all through her life. Her feet have never been markedly swollen. For the past few months she tells us that she has passed more urine than she used to. Therefore we start out with the idea that this woman has never been very strong, and that she has had attacks of rheumatism, with spells of oppression of breathing. She came into the hospital on the 16th of February, stating that a few days before she had caught cold, and in consequence had suffered more than usual from oppression from breathing. While she was walking on the street she was seized with a very severe spell of oppression, with some dizziness and vertigo. By a strong effort she was able to walk home, but then, feeling so much worse, she came to the hospital.

On admission she was suffering from extreme dyspnœa, and both lungs were found full of fine bubbling râles, while there was also slightly impaired resonance, which was universal. The temperature was normal, as were also her bowels. When we examined the urine we found a slight amount of albumen, and some hyaline, granular, and epithelial casts, while the specific gravity was 1012. However, the most urgent condition demanding attention was the great dyspnœa. Remember that we found râles and the general disturbance that was caused by the embarrassment of respiration. When the heart was examined a mitral systolic murmur was found, followed by a distinct second sound. There was also a diffused, somewhat increased impulse, as well as a faint murmur heard at the aortic cartilage, which is so soft that it is probably due to anæmia. In truth, the cardiac lesion in this case consisted in moderate mitral regurgitation and some enlargement.

The temporals were also very prominent, and there was a condition of resistance of tension in both the radial and temporal pulse. Now to-day there are still some râles in the chest, but the percussion-note is clear, and she is not nearly so oppressed as she was. When she first came in, turpentine stupes were applied all over her chest, and she was given muriate of ammonium, five grains every half-hour, and two ounces of whiskey in milk. She was subsequently given Basham's mixture, and her improvement has been steady and marked. On the 20th (to-day) it is noted that her urine has a specific gravity of 1015, and there is still a trace of albumen. Now, as to the nature of the case. Her most prominent symptom is acute œdema of the lungs occurring in a woman who has some kidney-trouble and a slightly diseased heart. The most stress must be laid upon the kidney-complaint, because the mitral disease is not very marked, and because there is hypertrophy of the heart, which here seems to be rather due to the renal disease than a compensatory hypertrophy dependent upon the mitral lesion. While, therefore, there is undoubtedly some cardiac lesion, Dr. Da Costa regards the renal trouble as the more important. Now, as to the nature of this kidney-disease. When the low specific gravity, the tense state of the arteries, the varying quantity of albumen, and the condition of the heart are considered, they all point to contracted kidney, to parenchymatous nephritis, as does also the fact that dropsy has not been a marked symptom, for we usually do not have much œdema in this form of Bright's disease. It thus appears that we have in this patient undoubted kidney-disease, some slight derangement of the heart, oppression of breathing, and œdema that is due indirectly to the condition of the kidneys; for, though not the rule, it does sometimes happen that œdema will occur in contracted kidney, even when there is no disease of the heart. All kinds of rapid effusions, such as œdema of the lungs and the like, especially where they are apparently inexplicable, are very frequently due to Bright's disease, and most commonly to interstitial or parenchymatous nephritis. What used to be called serous apoplexy is frequently due to kidney-disease; indeed, nine out of ten such cases are so caused. So, also, we may have serous effusions into the pericardium, caused in the same way. Of course, we may have œdema of the lungs from heart-disease, but it is more frequently due to a contracted kidney.

So much, then, for the diagnosis and etiology in this case. What does the most good in these cases is vigorous counter-irritation by the use of turpentine and dry cupping all over the chest, and the internal administration of ammonia. Whether we use the aromatic spirits, $\frac{1}{2}$ drachm every half-hour or so, or the muriate of ammonium, which was used here, it proves a very valuable aid to the counter-irritation. The heart also needs stimulation, for the circulation is very much embarrassed, and for this purpose we are called upon to give moderate doses of alcohol. The patient has improved very much, and, the urgent symptoms having passed away, we will now direct our attention to the condition of the kidneys. She will be given Basham's mixture, and her diet shall be made up largely of milk, though she will not be restricted exclusively to it.

Gastro-Intestinal Catarrh causing Enlargement of the Liver.—This woman, 24 years old, has a good family history. She herself was well until September, 1884. Then she was taken with pleurisy, was in bed for a few days, when she got up, but during the whole winter she had more or less trouble from the pleurisy. Frequently since that attack she has been troubled with vertigo, nausea, and vomiting. Last December she was seized with a more severe attack of vertigo, nausea, and vomiting, which has continued quite persistently ever since. She has also been very costive, and has suffered greatly from headache. When she came into the hospital she complained of intense occipital headache, her tongue was coated, and her heart and lungs were normal. The area of liver-dulness was increased and her bowels were very costive. Her temperature was normal, but her stomach would retain nothing; all food was immediately rejected. The urine was alkaline, had a specific gravity of 1012, and contained neither sugar, albumen, nor casts. She was at once placed upon small doses of calomel with bicarbonate of sodium and a milk diet. Under this treatment she improved rapidly, and is now much better in every way, save that the occipital headache still persists and that her bowels are very sluggish, which condition seems very hard to overcome. There is not now nor has there been at any time any jaundice. The tongue is heavily coated with a yellow coat; the gums are normal, perhaps they are slightly swollen. There is, upon examination, some slight soreness on pressure about the pit of the stomach, and there is still some occasional vomiting, the vomited

matter being very sour. The stools are hard and dark. It appeared at first that there was some tenderness over the region of the liver, but, upon more careful examination, it was found that this soreness is confined to the region of the stomach and bowels. She has had no cough, and there is no heart-lesion. There is no pulmonary dulness, and the respiratory murmur is normal, but on the right side there is dulness from the scapula to the lower extremity of the ribs, which is, however, due to an enlarged liver. Why is it not due to a pleuritic collection? That this distinction should be made is very important, and the way to do so is very simple. If the dulness were due to a pleuritic effusion forced inspiration would make no difference, but as it is due to the liver there is resonance because the forcible action of the diaphragm forces the liver downwards, and the space occupied by the expanded lungs is greater than when it is less full. By this process, which we can call respiratory percussion, simple as it may seem, we can always tell the difference between dulness from pleurisy and that from hepatic enlargement. It is very important that we should resort to this crucial test, because from the history of the case alone we would be justified in supposing that the dulness was due to pleurisy. Well, now, what is the matter with the girl? We have evidently an enlarged liver, and we have gastro-intestinal catarrh. It may be asked whether these conditions could cause the nausea and vomiting, the vertigo and headache, and it can be answered that they certainly could. Such reflected cerebral symptoms are not at all uncommon, particularly in women. Gastro-hepatic derangements will frequently cause headache, vertigo, roaring in the ears, and sleepless nights. While such symptoms are apparently cerebral, they are rarely of abdominal origin. Well, now, what was the cause of the enlargement of the liver? This is not so easy to determine. The girl has led a temperate life, and there is no reason to suppose that the enlargement is due to any excess. At the first blush, such marked enlargement of the liver would suggest cancer, but if there were cancer we should surely have tenderness all over the region of the liver, which we do not have here. Moreover, a cancerous liver is usually enlarged downwards, and the enlargement is irregular in outline, while here the enlargement is upwards and the margin of the organ is felt to be smooth. We had one case in the house here where a congested liver presented such

a great enlargement that we were for a time quite sure that we had to do with a cancer, but under appropriate treatment the enlargement all disappeared. Well, then, if it is not cancer, what is it? Dr. Da Costa believes it is one of those cases that we occasionally meet, where we can make the diagnosis of fibroid enlargement of the liver and slight fatty degeneration. Such cases are not infrequently the result of long-continued gastro-intestinal catarrh. The liver first becomes congested, then harder, and finally undergoes fatty degeneration in places. It is hard to give an appropriate name to this condition: the older writers used to call it chronic hepatitis, which is to a certain extent correct, for the condition really grows out of a chronic inflammation. That we may be enabled to recognize this condition of the liver, Dr. Da Costa would emphasize the fact that in nearly all cases, besides the physical signs which we have here noted, there is also gastro-intestinal catarrh, which in this case was the primary trouble. The absence of jaundice is striking in view of the fact that the symptoms are from the liver, and yet it must be remembered that it is not usual to have jaundice unless there is great involvement of the hepatic cells, therefore we should not be misled in diagnosis by the absence of this symptom.

As already said, she has taken small doses of mercury with some benefit. She is better; but she is not well, for there still remains the tendency to headache, nausea, and vomiting; she is costive, and her tongue is still coated. Well, now, shall we go on with the calomel? As she has been using it since the thirteenth of the month, and as her gums are a little touched, it would seem better that we stop it and see what we can do with other remedies. Dr. Da Costa's experience teaches him that one of the very best drugs when the portal circulation is affected, when there is enlargement of the liver from congestion, is the phosphate of sodium; in the case to which he referred a short time ago, where he at first thought that he had to deal with cancer, its effects were very good. He strongly recommends it in such cases when they are non-malarial, but arise from a persistent congestion. Dr. Da Costa prescribed for this girl one drachm of the phosphate of sodium (in warm water) thrice daily on an empty stomach. It is better borne when given in warm water. It will sometimes act as a laxative, and if it does so excessively, the dose must be reduced. In addition to this internal medication, he recommended painting over the surface of

the liver with tincture of iodine diluted to one-half its strength. This girl's diet so far had consisted of milk and soups; this had been well retained save during the last twenty-four hours, when she vomited. She has had no solid food. She was directed to take a quart to three pints of skim-milk with lime-water (in the proportion of half an ounce of lime-water to four ounces of milk), and will also let her have the soup, and a few stewed oysters occasionally. All starchy articles must be rigidly excluded from the dietary. As she improves, she will be allowed to have some underdone meat; but it will be a long time before she can be allowed to use a mixed diet, and particularly any articles containing starch or sugar.

SURGICAL DIAGNOSTICIANS IN ROUMANIA.

The *Deutsche Medicinal Zeitung* of January 14, 1886, brings a story which is a poor compliment to our Roumanian colleagues. A peasant woman, 25 years of age, mother of seven children, had no coitus with her husband, for some reason or other, for the last four years. Nevertheless, she becomes pregnant, complains of great abdominal pains, and, feeling convinced that it is a tumor, is sent by her husband to a hospital in Jassy. The diagnosis of "cystosarcoma of the right ligament" having been established, the woman is placed on the operating-table, and laparotomy performed. The result of this unfortunate diagnosis and operation was the appearance of a child of seven months, which lived a few hours, while its mother succumbed on the seventh day after the operation. Official inquiries having elicited these facts, the surgeons were punished.

POISONING FROM THE EXTERNAL APPLICATION OF ACONITE.

DR. HERMAN GASSER, of Platteville, Wis., writes to the *Medical Record* (February 27, 1886) that he was called to see a druggist who was suffering from rheumatism in the feet. The patient had been employing tincture of aconite as an external application, and had used up an ounce in this way in three days. As he was no better, Dr. Gasser ordered the discontinuance of the aconite, and gave him salicylate of sodium and colchicum internally. On the following morning he was much better and took a hot foot-bath, keeping his feet immersed (without rubbing) for about half an hour. At the end of this

time he began to feel so "very peculiar" that the writer was sent for. He found him sitting in a chair, and complaining of tingling sensations starting from the hands and feet and extending over the entire body, and of nausea. The pulse was weak and slow, and the skin was cool and moist. As he was growing worse and was vomiting frothy mucus, he was put to bed, and hot-water bottles were applied to his body. Although he had taken no aconite internally, the symptoms were unmistakably those of aconite-poisoning, and Dr. Gasser was about to give him a hypodermic injection of brandy and digitalis over the heart, when he was taken with a spasm, made a few jerking efforts at respiration, and then seemingly died of syncope. The heart had apparently ceased to beat, and pulsations could be detected neither by the writer nor by Dr. Buck, who was present. Although without hope of restoring the patient, the hypodermic injection was nevertheless given, partly for the reason that it was prepared. In about a minute he began to gasp for air and the heart could be felt to beat. The injection was then repeated, hot wet cloths were laid over the heart, and an enema of brandy and digitalis was given by the bowel. Reaction was soon fully restored, the pulse and respiration became strong, and the skin warm, red, and covered with perspiration. This was followed by spasms, which were controlled by morphine and ether, and the patient then passed into a restless sleep, from which he awoke conscious, but dull. The following morning, though feeling rather stupid, he arose and ate breakfast with his family. Dr. Gasser offers the following explanation of the occurrence of poisoning:

"Tincture of aconite is a resinous solution in alcohol, and as fast as it was applied to the skin the alcohol evaporated, and the aconite was deposited like a coat of varnish on the skin. (The limbs were bathed with it from the knee down.) The hot-water soaking caused a congestion and softening of the skin, and put it in the best possible condition for absorption."

TSUCHIAKABI.

This drug is the fruit capsule of an orchid indigenous in Japan, and used there for a long time past. The capsules possess an acid and bitter taste, and contain a substance which is largely soluble in water. By treatment with spirit, an extract can be obtained which has a sharp but not unpleasant taste. It is com-

posed of a resin, acid and glucoside, to which are probably to be attributed its medicinal properties. The urinary bladder and passages are the parts of the body on which the medicament exerts its special action. The Japanese employ a watery extract of this drug, which would be administered in those cases for which cubebs and copaiba are prescribed, with the advantage of the absence of the disagreeable odor of the last-named drug.—*London Lancet*, January 2, 1886.

A NEW PREPARATION OF SPARTEINE.

An improved process for the preparation of sparteine has been recently laid before the Société de Biologie by MESSRS. HOUDÉ and LABORDE (*Rep. de Pharm.*, December, 1885, p. 533). It consists in exhausting in a displacement apparatus the leaves and branches of the *spartium scoparium*, reduced to a coarse powder, with sixty per cent. alcohol, filtering, distilling off the alcohol in a partial vacuum, dissolving the residue in solution of tartaric acid, filtering to remove a greenish, gelatinous matter, consisting principally of chlorophyll and scoparine, making the acid solution alkaline with potassium carbonate, and then shaking it several times with five or six times its volume of ether, which removes all the alkaloid. This is purified by repeating several times the treatment of dissolving in solution of tartaric acid, neutralizing, and shaking the alkaloid out with ether. In this way about three grammes of the active principle may be obtained from one kilogramme of the plant. Sparteine is described as a colorless liquid, heavier than water, containing no oxygen, and boiling at 278° C. It has a rather pungent odor, recalling that of pyridine, a very bitter taste, and when exposed to the air, turns brown and becomes of a thicker consistence. It is soluble in alcohol, ether, and chloroform, and insoluble in benzine and petroleum oils. Sparteine is an energetic base, and readily combines with acids to form salts that crystallize readily, the sulphate occurring in large, transparent, very soluble rhombohedra.—*Pharm. Journ. and Trans.*, December 26, 1885.

THE PRACTICAL USES OF LANOLIN.

From his investigations of the composition of the cholesterine fats found in keratinous tissue, DR. OSCAR LIEBREICH (*Brit. Med. Journ.*, February 13, 1886) conjectures that the absorption into the skin would be best in

the case of those fats which have their origin in keratin-bearing substances, as hair, epidermis, etc. The old theory that the skin was only oiled from glandular secretion did not harmonize with these researches; and lanolin, upon his suggestion, is now being tested as to its efficacy in therapeutics as a new basis for salves and ointments. It possesses such peculiar properties, also noticed by Berthelot, that it becomes a matter of necessity to give a number of formulæ, in order that the druggist may more easily compound and dispense the remedy. It is also of importance to add other ingredients to make it more pliant, as it is a too sticky mass in itself to be employed alone; and from the many trials which Dr. Liebreich has made with different substances, as vaseline, paraffine, ointment, glycefin, oils, and fat for this purpose, he has found the latter by far the best, as the others generally interfered with the absorbing qualities of lanolin.

He also states that the many substances, under the name of pure wool fat and wool oil, which have found their way into the trade before and since the introduction of lanolin, are injurious, as they contain free acids and various animal substances.

Dr. Liebreich suggests the following tests for its purity in therapeutics:

1. A small quantity, on being heated in water over a water-bath, must show the absence of glycerin.
2. If a solution of caustic soda be added, ammonia must not be developed.
3. The fat, if a small portion be heated with water on a water-bath, must separate in oily drops without producing an emulsion. If the quantity employed be large, it must separate as a clear oil.
4. With blue litmus-paper the reaction must not be acid.
5. For examination, if it be mixed or well rubbed with water upon a ground-glass plate with an iron spatula, the result must be a product containing over one hundred per cent. of water; and if the lanolin employed be pure, the kneaded mass will be sticky and paste-like, to which the spatula readily adheres; but if impure, the mass will have a soap-like smoothness, from which the spatula readily glides.
6. On exposure the upper surface of lanolin and all lanolin salves and ointments becomes darkened, due to the evaporation of water, and not to its decomposition.
7. It never becomes rancid, and its smell should remind one of wool.

Dr. Liebreich's experience with the remedy, with that of other physicians, has been but limited, yet he does not hesitate to pronounce the results so far obtained most promising.

The first question which presented itself was whether the skin would bear it well. From its use in over four hundred cases in the hospital and private practice of Dr. Lassar, the dermatologist, no irritation of the skin was ever produced, a result which his own experience, during the years in which he has been experimenting with it, confirms. For this reason alone it is to be highly recommended for massage.

It is true, it is not as smooth as vaseline, but it has the advantage that the skin, after being rubbed dry with a cloth, still remains soft and pliable.

In cases where the epidermis is fissured, as, for instance, in chapped hands, it may be advantageously employed as follows:

The parts affected, particularly the hands, are to be well washed with some good soap, and then to be thoroughly rinsed with water. Upon the moist surface a small quantity of the ointment is to be well rubbed in, and the parts afterwards to be wiped with a dry towel. The skin is left soft and supple, on account of the rapid absorption and retention of the lanolin, and, what is more remarkable, the hands are not greasy, yet the water flows from them as if oiled. Accordingly, it may be especially useful for the hands of surgeons and obstetricians. Hands thus treated show a greater resistance towards cold and water.

The influence produced upon the skin in seborrhœa sicca is remarkable. On combing the hair with a fine comb the scales disappear rapidly.

In pruritus ani he has used lanolin with sulphur with admirable results.

Dr. Lassar, in his polyclinic for skin-diseases, has found that psoriasis heals very easily and quickly, and without irritation, through the use of a twenty-five per cent. lanolin-chrysarobin ointment. It remains for the future to determine whether in all cases equally favorable results will be reported.

CASE OF POISONING WITH OIL OF AMBER.

In the *Vierteljahreschrift für Gerichtliche Medizin und Öffentliches Sanitätswesen* (vol. xliii. p. 261) we find the report of a case of intoxication with oil of amber, a remedy which in Eastern Prussia enjoys great popularity as an abortive medium. A woman, 30 years of age, took with suicidal intentions a tablespoonful

of the oil of amber, and was soon seized with violent vomiting and diarrhœa, attended by a considerable rise of temperature. She happened to be pregnant, and aborted soon after ingestion of the drug, while the symptoms of a general intoxication grew more and more intense. The general morbid symptoms recalled greatly those of typhoid fever. The woman, however, being of a strong constitution, revived.

PEPTONATE OF BISMUTH.

LANG tried the peptonate of bismuth in a case of gastralgia becoming paroxysmal several hours after a meal, and depending probably upon a duodenal ulcer. After all known standard remedies had failed, Lang was not surprised to find that this drug (given in drachm doses) could not bring any relief either.

A CASE OF POISONING BY CASTOR BEANS.

The *ricinus communis*, more familiarly known as the castor-oil plant, is quite frequently cultivated in our flower-gardens, especially among the Germans, and but little attention is paid to the danger of the ill effects that may originate from the ingestion of the seeds. The United States Dispensatory states that two of the beans will cause serious vomiting and purging, and three have taken the life of an adult. This statement would startle the laity, since their children during play-hours have abundant opportunities to take advantage of this source of poisoning.

DR. S. E. EARP (*Cincinnati Lancet-Clinic*, Feb. 6, 1886) reports the following case of poisoning with these seeds which is worthy of being noted not only on account of the severity of the symptoms, but the rarity with which a similar condition is met in practice.

On the afternoon of May 13, 1885, E. D. Ferboss, aged 52 years, and by occupation a conductor on the I. B. and W. Railroad, purchased a small quantity of castor beans to plant in his door-yard for the purpose of ornamentation. After preparing the ground for the reception of the seed, and removing the capsule of the beans, he accidentally put one or two in his mouth and unconsciously crushed them with his teeth. The prompt action of the salivary glands and the sweetish nature of the substance made the taste rather agreeable, and he was induced to eat ten of the beans before his appetite for them was gratified. The time at which the stomach received the seeds was 3 P.M., and no uneasi-

ness whatever was experienced until 5.30 P.M., which was thirty minutes after he had eaten a hearty supper. At this juncture the face became flushed; a tingling sensation of the skin, confusion of ideas, and intense abdominal pain were prominent features. At 6.30 emesis was violent in the extreme, and each effort brought forth large quantities of mucus mixed with blood. An hour later the symptoms became more aggravated, and the bowels moved frequently with bloody stools, attended with great pain and tenesmus. A messenger was despatched for Dr. Earp, but owing to his delay in finding his office he did not see the patient until ten o'clock, at which time some of the above symptoms had subsided, but the purging and vomiting, with increased abdominal pain, continued. The temperature was 96° F., the pulse 60, and the skin, cold and clammy, was bathed in perspiration. The patient could not give an intelligent history of his case,—in fact, appeared rather stupid, and his memory was unreliable. Tympanitis and abdominal tenderness were well defined, and the muscles of the throat and chest were tender to the touch from the long-continued emesis, and the situation seemed to indicate that collapse was not far distant. Dr. Earp administered $\frac{1}{8}$ grain of morph. sulph., 10 grains of bismuth. sub. nit., and 2 grains capsicum pulv., and ordered dry heat applied to the extremities. No drug-store being located in the vicinity, he was compelled to depend upon his pocket medicine-case, and therefore gave small doses of carb. of ammonia rather than the aromatic spts. of ammonia. After the second administration of the above combination the patient began to react, and when the doctor left his bedside, at 1.30 A.M., he was resting somewhat better. Dr. Earp instructed the attendant to continue the same treatment at intervals of two to four hours, as necessity demanded. He saw the patient again at 10 A.M., and his temperature was 102° F., pulse 90, tongue heavily coated, and skin dry and harsh. The bowels had moved only twice since daylight, and although the vomiting had ceased there still remained some nausea. The patient complained of a general soreness of the muscles, but continued to improve, and at the end of a week was able to leave his bed.

NITRO-GLYCERIN.

Among the errors of the last British Pharmacopœia the ordering this drug to be dispensed in chocolate tablets is perhaps the worst. Not only is the dosage uncertain

and the manipulation required dangerous, but this method of administration is slower in action and exceedingly expensive; in fact, it is difficult to conceive why the compilers of the last edition of the Pharmacopœia should have gone out of their way to choose so inconvenient and impracticable a vehicle when the one per cent. solution of the drug, which has been in general use for a considerable period, was open to them. It is stable, easily gauged, and prompt in action, and has in fact all the merits which are conspicuous by their absence in their present formula. The tablets in question are not stamped, and bear no indication of their nature or strength, and mistakes which might be dangerous in their results may easily occur.—*Medical Press*, January 13, 1886.

POISONING BY BENZINE.

DR. A. N. KAZEM-BEK reports the very rare occurrence of a case of fatal poisoning by benzine (*Indian Med. Journal*, January, 1886). The case was that of a retired soldier, an habitual excessive drunkard, who had mistaken benzine for vodka (aqua vitæ), and drank 3 drachms of the fluid. Though sober at the time, the patient did not discover his mistake, since he had absolute loss of smell and taste (as may be seen from the fact of his having taken with relish several glassfuls of an infusion of horse excrements, which his relatives had given him as vodka on several occasions with curative aims in view). In about ten or fifteen minutes the patient lost consciousness. Two hours later the author found him in a comatose state, with reaction less, slightly dilated pupils, insensible cornea, general anæsthesia, trismus, irregular, stertorous breathing, hardly perceptible pulse, coldness of the body, paralysis of all four limbs, great distention of the belly; later on, myosis of an extreme degree (as if from opium) appeared. The patient died in a comatose state about seventeen and one-half hours after the ingestion of the poison. The exhalation of benzine by the lungs was so intense as to produce extreme giddiness in the author (after four hours' stay with the patient), and nausea with vomiting in the patient's brother. At the post-mortem examination there were found congestion of the meninges, sinuses, and the ependyma of the ventricles; accumulation of serous fluid under the pia mater and in the ventricles; congestion of the pharyngeal, laryngeal, and tracheal mucous membranes, and of the lungs; about

an ounce of dark fluid in the right cardiac ventricle; chronic catarrhal changes in the mucous membrane of the œsophagus, stomach, and intestines; finally, an odor of benzine in all the organs and cavities of the body. The author concluded that death was caused by asphyxia. While pointing to the absence of any characteristic lesions, he expresses his belief that the specific odor which permeates the whole body is the single criterion for recognizing a case as that of benzine-poisoning.

COCAINE IN OINTMENTS AND SUPPOSITORIES.

Cocaine being insoluble in oily and fatty substances, it is advisable, in cases where it has to form an ingredient of a pomade or suppositories, to first dissolve it in oleic acid, and afterwards to add the other substance to it by small quantities at the time. Treated in this manner the cocaine will assimilate itself with the greasy substance, and a homogeneous preparation will be obtained.—*Druggists Circular*, February, 1886.

MILK TESTING.

Those who are called upon to test a large number of samples of milk, in a rapid yet exhaustive manner, will find the following simple method invaluable. The apparatus used is a stoppered burette of 100 c.c. capacity, with a glass tap at bottom. The solutions necessary are a solution of one part of caustic soda in two hundred parts of rectified spirit, a solution of one part glacial acetic acid in two parts of distilled water, and Fehling's solution; also pure ether. Into the burette are poured, first 20 c.c. of the alcoholic solution of soda, then 20 c.c. of milk, then 25 c.c. of pure ether. These are then well shaken together and allowed to stand at rest for six or eight minutes. Two layers will result. The lower one is then drawn off through the glass tap. In this we have the sugar of milk (lactose) and the casein. The ether layer remaining in the burette contains all the butter. The amount of butter is obtained by evaporating this in a tared porcelain, glass, or platinum dish. In the other solution the casein is estimated by making up the 200 c.c. with distilled water and precipitating by means of 2 c.c. of the acetic acid solution. The liquid being then passed through a tared filter, the separated casein is retained, and may be dried and weighed. The filtrate contains the sugar of

milk, or lactose, which may be readily estimated by Fehling's solution. The whole of these estimations is easily performed in less than two hours. At the commencement of this process, 20 c.c. of the milk should have been acidulated with 1 c.c. of the acetic solution, and set on a water-bath to evaporate, and finished in a hot-air bath. This being done in a platinum crucible, the dry residue, after weighing for total solids, can be ignited, and the weight of ash determined. The complete analysis, giving butter, casein, lactose, ash, and water by difference, is thus obtained within two hours, the results, with ordinary care and skill in manipulation, being most reliable.—*Pharmaceutical Record*, February 1, 1886.

THE MECHANICAL ACTION OF DRUGS.

This subject, which has been too long neglected, has lately inspired the researches of more than one inquirer. M. SCHUTZ's experiments and results are extremely interesting, as may be judged by the following description of one series of them only: From healthy living dogs the stomachs were carefully excised, and suspended in a glass chamber filled with moist air at 37° C. (98.6° F.), when the so-called spontaneous digestive movements propelled all contents towards the pylorus, frequently continued for periods of from thirty to one hundred minutes. Inquiring into the action of weak solutions of various alkaloids, etc., upon this gastric activity, M. Schutz finds that distinct and chronic spasms are produced by digitaline, helleborine, muscarine, physostigmine, and scillaine; increase in the number and velocity of the movements was caused by apomorphine, caffeine, emetine, nicotine, strychnine, tartar emetic, and veratrine; while atropine, chloral hydrate, cocaine (as might have been anticipated), nicotine (in larger doses), and pilocarpine, quickly stopped these motions, or greatly diminished their activity.—*Medical Press*, January 13, 1886.

PECULIAR IDIOSYNCRASY WITH REGARD TO QUININE.

Quinine is always supposed to reduce the temperature, and yet DR. MOECKEL, of Nuremberg, refers to a case in which a woman, after taking 3 grains of quinine for malaria, had a chill and a rise of temperature up to 104.5° F. It is stated that this increase of temperature occurred every time quinine was administered.

— THE — Therapeutic Gazette.

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Original Communications.

A STUDY OF THE PHYSIOLOGICAL AND THERAPEUTIC EFFECTS OF ADONIDIN.

BY HOBART AMORY HARE, M.D. (UNIV. OF PA.)*

THE adonis vernalis has for many years been used empirically in Russia as a remedy for all forms of cardiac failure; but until the clinical observations of Buhnów, of St. Petersburg, were made in 1879 nothing was known of the action of the drug.† In

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† St. Petersburger Medicinische Wochenschrift, January 6, 1879.

1882, Vincenzo Cervello, of Strasburg, made a limited research in regard to its action on man and animals, and it is to him that we owe the discovery of the glucoside, the effects of which this paper describes.‡ Following these researches came those of Lesage in 1884, which were carried out in the laboratory of Germain Sée at the Hôtel Dieu. In the same year Durand, of Paris, published his elaborate monograph, entitled "De l'Action Comparée des Médicaments Cardiaques," in which he gives the results of a number of clinical studies of great value.

Almost at the same time there also appeared in the *International Journal of Med-*

‡ Archiv. für Exp. Path. and Pharm., t. xv., 1882.

ical Sciences a clinical article* by Dr. Gastano Traversa,* and another elsewhere by Dr. Gluzinski,† in which the virtues of adonis vernalis and its glucoside were highly praised.

Still more recently, Huchard presented, on December 23, 1885, in the Société de Thérapeutique, cardiographic and sphygmographic tracings taken from persons under the influence of adonidin, and also described the effects produced in the rabbit when the drug is given hypodermically. Lastly, Dr. J. C. Wilson, of Philadelphia, has published a paper in the *Medical News* for January 2, 1886, on the action of the drug.

As nearly all the observers mentioned have confined their researches more to the purely clinical aspects of this medicament than to a study of its physiological properties, and as they all report such favorable results from its use at the bedside, it occurred to me that a thorough experimental research on the physiological action of the remedy might be of value, and to this end the following experiments were performed.

If the heart of a normal frog be cut out and placed in a solution of adonidin of the strength of 2 grs. to the ounce, the movements are for a moment more rapid than before, but soon become slower. Under these circumstances the cardiac movements become slow, not because diastole or systole is prolonged, but because the cycle of cardiac movement is imperfectly performed, the heart-muscle seeming too weary either to contract or expand. When the same solution is placed in the pericardial sac of a frog, the centric nervous apparatus being left untouched along with the circulatory system, previous to the increase of rate seen in the isolated heart comes a short stage, in which the cardiac movements are slowed, apparently by pneumogastric stimulation, for the diastolic pauses are the portions of the cycle which are prolonged. Along with this slowing, the heart-muscle contracts much more thoroughly, and arterial pressure is increased, for the blood-vessels in the mesentery of a frog can be seen to decrease their lumen. Soon, however, the inhibition of movement seems to be removed or overpowered, for the pulse-rate is increased greatly. This condition of rapid movement continues for a short time, and finally the heart again becomes slow, with the slowness of weakness, the movements being like those

already described in connection with the isolated heart. In both the isolated heart and the heart *in situ* diastole ends the scene. Two questions now arise: namely, what is the cause of this stoppage in diastole, and what produces the slowing of the cardiac rate occurring in the heart when lying in its sac.

The diastolic arrest of the isolated heart can only be due to one of two things,—either the inhibitory cardiac apparatus is stimulated, or the heart-muscle and its motor ganglia are depressed. The latter seems far more likely, not only from analogy but from the fact that in the experiments performed on the non-eviscerated heart of frogs, the inhibitory nervous apparatus was found to be stimulated centrally and not peripherally; and furthermore, the very character of the slowing of the isolated heart showed it to be due not to stimulation but to increasing depression.

That the vagi are not stimulated peripherally by this drug at any time was proved by the following experiments, and also by the results of the observations on the action of the drug upon dogs, which will be described farther on.

If the inhibitory nerves be cut before the adonidin is placed in the pericardial sac, the usual increase in rate under such circumstances takes place, and the addition of a small quantity of the drug now immediately increases the rate still further, without the appearance of any primary stage of slowing of rate. This proves that the primary slowing occurring when the vagi are intact must be due to exaltation of their function, and also proves that the drug must directly stimulate the heart-muscle; for the rapid rate under these circumstances is not one of weakness but of power. It should not be forgotten that this drug in large quantities finally stops the heart in diastole, whether the vagi are intact or divided. In small quantities it does not produce the primary slowing of the pulse, nor does it bring on the peculiar weak and imperfect movements which have already been described as occurring before death. In other words, it requires large doses to affect the pneumogastric, and large doses to depress the heart-muscle.

One more point is to be decided. Is the rapid stage following the primary slow stage in the viscus *in situ* due to paralysis of the vagi, to direct stimulation of the heart which overcomes inhibition, or to both? While I am unable to state whether over-stimulation takes place, it is a fact that the pneumogastric nerves are certainly in this second stage de-

* *Medical Times and Gazette*, October 21, 1885.

† Quoted by the *THERAPEUTIC GAZETTE*, July 15, 1885, p. 475.

pressed by the drug, for galvanization of these nerve-trunks during this stage failed to produce as marked a slowing of rate as should have occurred, provided the inhibitory pathway was open. From this point we may conclude that although the stimulation of inhibition in the first stage is centric, the paresis of inhibition in the second stage is peripheral. The same changes are present when the drug is injected into the posterior lymph-sac of a frog. The animal soon becomes passive and immovable, and dies shortly, so quietly that its death is not noted until he is handled.

That the high arterial pressure produced by this drug is due in part to centric stimulation of the vaso-motor system is proved by the fact that the mesenteric blood-vessels are seen to dilate after section of the spinal cord. Further evidence of this fact was adduced when studying the influence of the glucoside on the circulation of mammals, for there is but little, if any, difference in the action of adonidin on the dog and frog.

The injection of the quarter of a grain of adonidin into the jugular vein of a dog, weighing twenty-five pounds, causes a great increase of cardiac force and arterial pressure, and a marked decrease in pulse-rate. Following this stage of exaltation of force and pressure comes a marked fall of arterial tension, and, as is usual, a decrease of pulse-force, with an increase of pulse-rate. This condition remains the same for some time, until at last the heart beats irregularly, and stops in diastole, just as did the heart of the lower animals. We have, therefore, several stages to be accounted for in the action of this drug on the dog, viz., the increase in arterial pressure in cardiac force, and decrease in pulse-rate, in the first stage; the fall of arterial pressure and force, and increase of pulse-rate, in the second stage; and the arrest of the heart in diastole at the end of the third stage. Turning attention to the rise in arterial pressure, the writer eliminated all danger of a rise due to asphyxia by curarizing the dog, artificial respiration being maintained. Under these circumstances arterial pressure was increased as greatly as when the animal was not curarized. What, then, is the cause for this rise in arterial pressure? Probably two factors lie at the bottom of this condition, namely, centric vaso-motor stimulation, aided by increased cardiac force, for when the spinal cord was divided high up in the cervical region, thereby producing vaso-motor palsy, the rise in pressure under the influence of adonidin was of course less marked, and the rise

which did occur must have been due to increased cardiac force.*

The experiment on the fourth dog was made to discover how the slowing of the pulse was produced in the first stage. One-fourth grain of the drug was administered in the same manner as before, the animal having first been curarized. No sooner was the slowing of the heart-beat most marked than the vagi were divided, and instantly the pulse was increased from 102 to 192 per minute, proving that the slowing was due to stimulation of inhibition, and that this stimulation was centric. The increase in force has already been shown to be due to a direct stimulant action of the drug on the heart itself.

In regard to the symptoms of the second stage, we find that the fall of arterial pressure is due to palsy of the vaso-motor system, since, when the cord is intact, galvanization of the sciatic nerve or asphyxia did not bring about increased pressure.

The decrease in pulse-force is due to the depressing action of the drug on the heart itself, as is also the arrest in diastole. The increase in pulse-rate is due to inhibitory failure, for in the dog, as well as in the frog, galvanization of the vagi failed to slow the heart.

In the next experiment the dose of the drug used was much smaller than before, since it had become evident that the larger doses were absolutely toxic in their character. An eighth of a grain was, therefore, injected into the dog's jugular vein, curare and artificial respiration being used. As a result, I found that in small doses this glucoside does not cause any primary slowing of the heart, but increases its frequency, its force, and the arterial pressure from the first, all three of these features being permanent and constant under the smaller dose. Even with this dose, however, the animal died. A twelfth of a grain given slowly to a large dog did not produce death nor a primary slowing in rate, but seemed to increase rate, force, and pressure. In this last experiment no tracing was taken, the jugular vein only being exposed.

I should have stated before that when I poisoned a small dog by a large dose of adonidin there were symptoms of nausea and intestinal spasm, accompanied by the expulsion of fæces. The animal had no convulsions or spasms, but lay on its side, with pupils widely dilated. When death occurred, respiration

* That the cord was thoroughly divided is proved by the fact that asphyxia failed to cause any rise in pressure.

continued some moments after the heart stopped.

ACTION ON THE NERVOUS SYSTEM.

When an eighth of a grain of adonidin is injected under the skin of a medium-sized frog, in a few moments he becomes drowsy and disinclined to move. When a jump is attempted it is incoördinated and clumsy, and a succession of leaps is of rare occurrence. Pricking with a pin now fails to produce any reflex drawing away of the leg which is irritated, and in the course of five minutes following the administration of the drug he permits the foot to crackle in the flame of a gas-jet. That this is not due to a loss of power is proved by the fact that if the amphibian so wills he can leap from place to place, and we therefore must conclude that paralysis of sensation has taken place somewhere in the course of the afferent nervous system. That this effect of the drug is on the sensory tract of the spinal cord is proved by the fact that if the artery of one leg be tied and the poison given above it, each leg fails to be drawn away from the fire.

If another frog is now taken, and a hypodermic of strychnine and adonidin be injected into his posterior lymph-sac, the symptoms produced by the excito-motor are temporarily much decreased in violence, their more decided action coming on only when the strychnine has been absorbed to such an extent as to overpower the more feeble drug. From the first the sensory side of the nervous system is considerably depressed, and a sensory impulse of a very decided character is required to produce a convulsion. Pricking with a pin in any portion of the body fails to cause even a limited spasm, and finally burning of the foot does not cause any explosion of motor impulse. A very beautiful example of the escape of the auditory nerve during otherwise total sensory paralysis from this drug was demonstrated in this experiment.

While no amount of pricking and burning sent a sufficient sensory impulse to the centres in the cord to excite the motor centres, the scratching of a parlor-match, or a sharp blow with the knuckle on a tin can near by, invariably caused a convulsion. Other frogs being taken, their hind legs were severed from their bodies in such a way that the sciatic nerves were the only fibres which bound the legs to the trunk. Adonidin was now injected into one leg below the section, and strychnine was given hypodermically into the lymph-sac on the back. In a few moments a strychnic con-

vulsion came on, which affected equally both legs, showing that the motor nerve-trunks are not affected by adonidin. This experiment also showed that the drug under consideration does not affect the muscles themselves, and galvanization of the muscles failed to show any decrease in their irritability. Galvanization of the sciatic in the poisoned leg failed to show any paresis of that nerve, since it conveyed the impulse to the cord and produced a strychnic spasm. That the peripheral filaments of the sensory nervous apparatus remain unaffected during the poisoning is shown by the fact that, when the tips of the toes of the hind leg which had been poisoned and separated from the trunk, but for the sciatic, are stimulated, the impulse is carried to the spinal centres.

In regard to the practical use of this remedy, one word must be said before closing.

Only one observer, out of many, has reported disadvantageous results from its use, namely, Lublinski, who found that in his cases the drug produced vomiting and diarrhoea. These untoward symptoms must have been due to some mistake in the size of the dose, for in a patient of Durand, who took by mistake 3 grs. of the glucoside, the same symptoms appeared. Perfect recovery was soon reached in this case, although the boy was only 14 years of age.

Durand and others all declare that adonidin is possessed of far greater diuretic properties than is digitalis. Thus, we find that Traversa (*loc. cit.*) says, "It increases the quantity of urine passed from 300 to 400 cubic centimetres per diem to 2000 or 3000, the spec. grav. being diminished, also the total diurnal quantities of chlorides and urea." Œdema is rapidly diminished under its influence. While Durand does not believe that its cardiac effects are equal to those of digitalis, he concludes that in some cases this drug is superior to the latter remedy, particularly where a long-continued course of the glucoside is necessary, since no one has yet found it to be cumulative in its action.

The same writer thinks that convallaria and caffeine possess higher diuretic powers and less cardiac influence than adonidin.

Finally, he sums up the results of his observations as follows:

In doses of $\frac{1}{3}$ gr. adonidin—

1. Increases arterial tension.
2. Regulates the heart-beat.
3. Diminishes the frequency of the pulse.
4. Increases the force of the cardiac contractions.

5. Acts with rapidity, its effects being only present during its administration.

6. Increases diuresis.

7. Is well tolerated.

8. That the indications for its use are the same as digitalis.

He commends its use, especially in mitral insufficiency and interstitial myocarditis, and in palpitation of the heart. Such a drug ought surely to be of signal service to the profession, for, though it is at present of high price, being made almost entirely by Merck of Darmstadt, there is no reason why a continued call for it should not make its cost within the reach of every one, the adonis vernalis being by no means rare, its rhizome having been used as an adulterant for black hellebore, and the process of obtaining the glucoside is not expensive.*

Conclusions.—Adonidin in all doses increases arterial pressure by stimulating the vaso-motor centres and by increasing the cardiac force.

In moderate doses it increases the pulse-rate and force from the first, but when large toxic doses are given, it primarily slows the heart by stimulating the pneumogastric, and then increases pulse-rate by depressing the inhibitory nerves and stimulating the accelerator apparatus.

The slowing of pulse-rate is also in all probability due in part to increased arterial pressure, as under these circumstances the blood-paths are greatly diminished in calibre.

On the nervous system the drug has but little action, unless the quantity administered be enormous. Under these conditions it paralyzes the sensory side of the cord, but has no effect on the motor tract or on the efferent or afferent nerve-trunks.

A NEW REMEDY IN CYSTITIS AND LITHIASIS—PICHI (FABIANA IMBRICATA).

By HAL. C. WYMAN, M.D.†

SO short a time has elapsed since this remedy was offered to the medical profession that a report on its use may seem premature. But so long as the report is confined to a simple statement of facts, leaving the reader to judge of the influence the medicine may have had in bringing about the results, no one need scruple at the evidence.

The first case in which I used the fl. ext. pichi was early in January, when my attention

was called to the drug by Dr. J. E. Clerk, the chemist of this city. A Mr. G., aged 23 years, who contracted gonorrhœa a year or more ago, and who had stricture of the urethra, which I found necessary to divulse a few days before Christmas. A copious hemorrhage from the deep urethra followed the operation, and a few days later severe vesical tenesmus disturbed the patient so that sleep and appetite vanished. All the symptoms of typical cystitis speedily developed. Morphine, belladonna, hyoscyamus, and alkalies were used internally and by the rectum for a week without materially modifying the symptoms. So irritable did the bladder become that it would not retain urine longer than five to fifteen minutes. I now began the use of the fluid extract of pichi in 15-drop doses in water once in three hours. The tenesmus and pain began to decline after twenty-four hours, the mucus and pus also to diminish in quantity, and at the end of the week the bladder would retain its contents three hours without causing the patient any inconvenience.

This patient has now, March 8, fully recovered. I think the cystitis was of traumatic origin,—the harsh manipulation of the vesical mucous membrane with the divulsing apparatus. Thompson's instrument was the one used.

Mrs. F., aged 21 years, miscarried two years ago. Since then had not been well enough to do her work. She had backache, dyscinesia, leucorrhœa, rectal and vesical tenesmus. The uterus was lacerated to the depth of one-eighth of an inch on the left side of the cervix. There was marked ectropion of the lining of the cervix uteri. I thought a plastic operation closing the fissure in the cervix would cure her, and I put her under chloroform and operated in December last. She improved for a couple of weeks after the operation in all her symptoms except the vesical tenesmus; this remained the same, and gradually became worse, so that I was obliged to make another study of her case during the last week in January. The urine contained mucus and pus, was alkaline in reaction, and precipitated the phosphates in such quantities that the latter part of the stream in urinating was white as milk. She had exhibited an idiosyncrasy against the use of opiates before I subjected her to the operation for lacerated cervix, so that I did not attempt to get the virtues of those drugs, but put her at once on 15-drop doses of the fluid extract of pichi combined with 1 drachm of simple elixir. Her bladder I washed out daily

* The Pharmacist, December, 1885, p. 376.

† Surgeon West End Dispensary, Detroit, Michigan.

with a one per cent. solution of cocaine muriate, which controlled the pain admirably. The urine speedily exhibited the odor of the pichi, became acid in reaction, and held the phosphates in solution. She has made a good recovery in the place of what threatened serious progressive invalidism.

Mr. B., aged 25 years, who had been afflicted with cystitis in former years, but had not suffered any symptoms of that disease for more than a year, came under my care at Harper Hospital for the cure of fissure in ano. Under chloroform I paralyzed the sphincter by stretching it with my thumbs. While he was under the influence of the anæsthetic I explored his urethra with a No. 12 (American) sound, meeting with no resistance or impediment to the easy passage of the instrument into the bladder. Two days after this very gentle manipulation of the urinary tract (for I don't think the operation on the sphincter could have caused it) he began to pass turbid urine and to have vesical tenesmus. One-grain opium suppositories had in the mean time been used in the rectum three times a day, easing his pain but not changing the character of his urine. Pichi was now resorted to, and all symptoms of cystitis soon disappeared. At date he continues in hospital, resting for the cure of his anal fissure.

Mrs. —, aged 27, had chronic cystitis, due to neglected retention of urine, following accouchement. She had overflow before the catheter was used to relieve her. I found it necessary to divulse her urethra to insure thorough evacuation of her bladder. It was very irritable after the operation. Pichi combined with fluid ext. hyoscyamus controlled the painful symptoms and gave the bladder the physiological rest essential to a cure.

Mr. H., aged 71 years, had been getting up nights to pass urine for the last five years. Ten months ago he found he could not empty his bladder, and was compelled to call a surgeon to use the catheter. A severe chill followed, and he was very sick for two months, having the catheter used every day. He learned to use it himself, and continued to use it daily until last February, when he had another chill, and his left testicle swelled and inflamed. He was too sick to use the instrument. I was summoned by his medical attendant in consultation, and opened a large abscess of the left testicle, and advised against further use of the catheter. His prostate was greatly enlarged. Opium and camphor suppositories relaxed the spasm of the prostatic muscles so that he got along without the catheter. His

urine was heavily loaded with urates. Mucus, blood, and pus were present in abundance. He was put on fluid ext. pichi, and continued its use for three weeks. He has made an excellent recovery.

I might enumerate numbers of cases of lumbago and sciatica in the course of which urates were precipitated from the urine in large quantities, and which recovered while the patient was taking the pichi. Combined with a potassium salt I have found it to act more quickly than any other remedy in bringing about a solution of the urates and relieving the rheumatic neuralgia so frequently associated with that unstable condition known as lithuria, phosphatism, etc. A formula I have often used is,—

R Fl. ext. pichi, ʒi;
Potass. nitrate, ʒi;
Simple elixir, ʒiii. M.
S.—Teaspoonful once in two hours.

ARSENIC IN THE TREATMENT OF ARTHRITIS DEFORMANS.

BY KARL VON RUCK, M.D., NORWALK, OHIO.

HAVING met with indifferent success in the treatment of this affection by iodide of potassium and external applications of iodine, and having a patient who, after trying these remedies for some three months, was insisting upon further trial of "no matter what," I determined to resort to arsenic. The patient was a lady, 46 years of age, had passed the climacteric period, and had always enjoyed good health previous to the present difficulty, which had its beginning two years ago, and soon after nursing a near relative during a tedious and fatal illness. She attributed the difficulty to the wringing of clothes out of very hot water while doing this nursing, and so wrenching her finger-joints,—work to which she had not been accustomed. When she came under my care the third phalangeal joints of the fingers, and these alone, were affected in both hands, and the enlargement was very considerable. There was neither pain nor tenderness on pressure, but occasionally what she called rheumatic pains in the affected joints and in the forearm. During the three months whilst I treated her with iodide of potassium the enlargement and the distortion of the affected joints increased, and the second phalangeal joints of the second and third fingers in one, and of the third finger in the other hand, became markedly enlarged, and the

muscles of these fingers showed beginning atrophy. There was also an enlargement of the joint in one of the great toes, which made its appearance during the iodide of potassium treatment.

She was now put upon Fowler's solution, 4 minims after each meal, and after two months' steady treatment, although no improvement could be made out, she had not grown worse, and this was deemed of sufficient encouragement to continue the remedy in somewhat increased doses.

When, at the end of two more months, the patient presented herself again, a slight improvement in the enlargement of the third phalangeal joints, especially of one hand, was thought to be noticeable, and the patient herself felt well convinced thereof, so she was advised to continue the treatment, with occasional intermissions, as the arsenic had upon several occasions produced a little puffiness of the lower eyelids. I did not see her again until over a year later, when she brought me another patient of the same class, at the same time showing me her hands, upon which no trace of the arthritic process could be discovered. She had taken the arsenic for six months longer, and then discontinued it, having only a very slight enlargement left in two or three joints, which disappeared afterwards without treatment. The toe, she said, had also got well.

This second patient had been under the care of many doctors, and her case dated back some six years; but she had never taken arsenic. No cause was assigned by her. She had had rather poor health for many years, suffering from dyspeptic troubles, and her present deformity made her very miserable, on account of the restricted use of her hands, and particularly on account of their unsightly appearance. She had just returned from a visit to the Hot Springs of Arkansas, and said that she had grown much worse under the treatment there.

Without going into further details of this case, I will simply say that she was put upon arsenic, and that although not entirely cured the patient has been greatly benefited in the course of a year. She is able to use her hands almost as well as she ever could, and her general health has been much improved, owing to the simultaneous relief of her dyspepsia. The articular enlargements are certainly diminished by one-half, and the contractures are yielding to a steady course of massage and manipulation. She is still under treatment.

In connection with these cases I would like to call attention to the etiological factor in arthritis deformans, especially in the first case; here the theory of a central cause situated in the nervous system finds good support. The development of the disease after nursing, and the death of a near and very dear relative, with the attending anxiety and grief, the symmetrical development and progress of the case, the trophic disturbances, all point in that direction; and I believe this theory to be further confirmed by the results obtained from arsenic, which, in my opinion, produces its therapeutic effects always by its action upon the nerves and nerve-centres.

PHARMACOLOGICAL CONTRIBUTIONS FROM
THE UNIVERSITY OF PENNSYLVANIA.

THE PHYSIOLOGICAL ACTION OF USTILAGO MAIDIS ON THE NERVOUS SYSTEM.

BY JAMES MITCHELL, M.D., LANCASTER, PA.

THE knowledge which we possess of the *ustilago maidis* is so very meagre that I have not been able to find any detailed account of its physiological action. It formerly received a brief notice from the German profession, but has never excited much interest until within recent date. By the above profession it is stated to possess abortifacient powers. We find mention made of the drug in Dr. H. C. Wood's *Therapeutics* for 1880 under the head of oxytocics, where it is stated "to appear to have active medicinal properties, and to have been used successfully in uterine inertia during labor by Dujardin-Beaumetz." Its more extended use of late seems to me to warrant a close study of its physiological action. Therefore, in accordance with the title of this paper, I have endeavored to ascertain, by means of an experimental research made in the Physiological Laboratory of the University of Pennsylvania, what action, if any, the drug possessed upon the nervous system. The animals used in my experiments were frogs. The plan which I pursued was to consider first the general action of the drug, and then any special action it might have upon the nervous system.

General Action.—The first effect witnessed after the injection of ten or fifteen minims of the fluid extract into the posterior lymph-sac of normal frogs was profound narcosis. The batrachian appeared greatly depressed, and

would remain motionless. The respiratory movements as a rule became rapid and irregular, at other times they were almost imperceptible. During the first stage of the poisoning voluntary movement was maintained. A semi-comatose condition, which was so marked in the early stage of the poisoning, was often succeeded by a short period of excitement, during which the batrachian would make frequent changes of position. This was quickly followed by great diminution of voluntary movement, succeeded by muscular tremors and clonic spasms. The muscular irritability appeared to be greatly increased. All the above symptoms then terminated in paralysis. At one stage of the poisoning anæsthesia of the surface became marked, and the animal would submit to pinching or burning without moving, though it was evident that the power of voluntary movement was not lost, from the fact of its occurring after the removal of the stimuli. If the dose was insufficient to produce death, all the above symptoms abated, the paralysis disappeared, and in the course of from one to two hours the animal appeared to have regained its normal condition. After one of my experiments the frog was observed for five days, and appeared during that time perfectly normal, proving, I think, the temporary effect of the drug.

With full toxic doses (20 to 25 minims) the above symptoms were greatly intensified. Coma and stupor were marked. The respiratory movements became very irregular. Great muscular weakness and relaxation followed, after which the muscular tremors, and, in the majority of cases, the clonic spasms, ensued, followed by paralysis and death. The pupils were contracted. The cutaneous anæsthesia was developed very early in the poisoning.

The immediate cause of death is, I think, due to a paralytic arrest of the respiration, since I found that the heart was beating rhythmically after all external signs of life had ceased. It has also continued to beat for one hour after the thorax was opened. The only exceptions to the above statement were noticed in two of my experiments, where the heart was found arrested in diastole. In one experiment it began beating feebly when mechanically stimulated, while in another experiment the auricles would contract, but not the ventricles. I also noticed that when five or six drops of the fluid extract were placed upon the exposed heart its movement would be arrested for a moment,

though it quickly began beating again with slower rhythm. The coma and stupor, with the marked anæsthesia of the skin, would indicate that the drug possesses certain narcotic or analgesic principles. It is also evident that the action of the drug is essentially of a paralytic nature, the paralysis in all cases being much more marked than the spasms. With very large doses of 30 minims the animal sank down almost immediately paralyzed, with only a few muscular twitchings. All voluntary movement and reflex action were abolished. The pupils contracted, and in a very short time the irregular respiratory movements ceased. Death in these cases also appeared to be due to failure of the respiration, since the heart was found beating.

Special Action.—It is evident, I think, from the above results, that the most characteristic effect of the drug is one of paralysis. The question, therefore, naturally arises, To what is this paralysis due? To ascertain this I made three sets of experiments upon reflex action, in all of which experiments the frog was pithed, so as to eliminate voluntary movement, and, at the same time, any action of the drug upon the hypothetical inhibitory centres of Setschenow in the medulla oblongata.

In my first series of experiments upon reflex action I observed that it was slowly and gradually diminished with small doses, until a period was reached when it suddenly ceased. The time required to produce this effect varied, and was also dependent upon the size of the dose. With large doses—of 25 or 30 minims—reflex action was abolished in from six to eight minutes; while small doses—of from 10 to 15 minims—required from thirty minutes to one hour and thirty minutes.

A brief description of the manner in which my experiments were conducted will, I think, be of value. The frog was first pithed, and allowed to remain in a dish of water until the shock of the operation had passed off. It was then suspended carefully by a wire through the lower jaw, and reflex action tested at regular intervals by immersing the posterior extremities in a two per cent. solution of sulphuric acid; the time from the contact of the toes with the dilute acid and a contraction of the limb being carefully noted, since this would indicate a normal reflex. After each test the frog's legs were carefully washed of the acid solution by a gentle stream of water, so that the sensory nerves of the skin might not be affected by the prolonged local action of the acid.

Two experiments were made expressly with large doses of the fluid extract of *ustilago maidis*, so that it might be proven conclusively that the diminution and final abolition of all reflex phenomena were due to the direct action of the drug, and not to any local action of the dilute acid upon the skin. And that this is the case is, I think, proven from the fact that, though reflex action was strong before giving the poison, after giving these large toxic doses it was abolished in from six to eight minutes.

The fact that *ustilago maidis* diminishes and finally abolishes all reflex action is abundantly proven, I think, by my experiments, the details of which I omit for lack of space. The question therefore arises, To what is this loss of reflex activity due? It is evident that the suspension of reflex action can only be produced in three ways,—by paralysis of the spinal cord, of the nerve-trunks or peripheries, or of the muscles, or to two or more of these causes combined. I will, therefore, consider the action of the drug upon these parts of the system in inverse order.

That the loss of reflex activity is not due to a paralysis of the muscular system is clearly shown in the second series of experiments which were made upon reflex action. I have observed in them that long after the strongest secondary current from a single-gravity cell and a DuBois Reymond's induction coil had failed to elicit the slightest reflex movement, when a mixed nerve (sciatic) was stimulated, the tributary muscles contracted strongly; and later, when the efferent nerve had failed to conduct the impulses to the muscles, strong contractions could still be induced by the direct application of the electrodes to the muscle. This clearly proves that the muscular irritability was still maintained.

Since reflex paralysis, which was so marked in the former experiments, is not due to a paralysis of the muscles, it must be due to a paralysis of some part of the nervous apparatus.

That the loss of reflex action is not due to a paresis of the motor nerves or peripheries is evident from what has been said in the paragraph before the last. Furthermore, other experiments clearly prove the above statement. For I have seen that though the direct stimulation of a mixed nerve (sciatic) with the induced current would produce violent contractions in its tributary muscles, not the slightest reflex tremor could be induced. That the motor nerves are, however, ultimately depressed, and finally paralyzed,

has also been ascertained by using definite strengths of the electrical current; it having been found that to produce these muscular contractions a gradual increase in the strength of the current was necessary, and that very late in the poisoning the strongest current failed to elicit the slightest response, though the muscles would still contract when directly stimulated. The experiments from which the above conclusions were derived were conducted in the following manner: The frog was first pithed and the left sciatic nerve exposed. The animal was then allowed to remain in water until the shock had passed off; after which the nerve was stimulated by an interrupted current obtained from a gravity cell and a DuBois Reymond induction-coil. The number of centimetres the secondary coil was removed from the primary in order to obtain just sufficient strength of current to produce a reflex movement was then carefully noted. The drug was then injected into the posterior lymph-sac, and the above test again repeated at intervals of ten minutes or more, the nerve being always stimulated at the same point.

Since it is abundantly proven that reflex paralysis is produced before the motor nerve-fibres and the muscles have lost their irritability, the question arises, whether the paralysis be spinal or due to a paralysis of the sensory nerves? That the loss of reflex action is not due to a primary paralysis of the afferent nerves seems indicated by the fact that if all the blood-vessels going to the posterior extremity of a frog were ligated, so as to prevent all access of poison to the limb, reflex action would be abolished in the protected limb *pari passu* with the unprotected leg; indicating, I think, that the failure of reflex movements in the unpoisoned limb must have been due to the direct action of the drug upon the cord. Further, by applying the interrupted faradic current to the exposed spinal cord in the dorsal region of poisoned animals strong contractions were induced in the posterior extremities, while no movements were produced in the anterior extremities, certainly showing that the failure of the cord to convey impulses upwards must have been due to a paralysis of its sensory (receptive) portion, while the motor portion must have been still capable of conducting impulses, as was evident by the contractions of the posterior extremities. That the motor portion of the cord is ultimately depressed is also indicated by the fact that the electrical current has to be gradually increased to cause these muscu-

lar contractions. It is obvious, therefore, that the seat of reflex paralysis lies in the sensory (receptive) portion of the cord. I would, therefore, conclude from my experiments on reflex action, that the *ustilago maidis* diminishes and finally abolishes all reflex movement by a paralysis of the sensory (receptive) portion of the cord; also that the motor portion of the cord and the motor nerves are ultimately depressed, as ascertained by definite strengths of the electrical current.

Whether the peripheries of the sensory nerves are affected or not early in the poisoning I have not been able to decide, on account of the early depression of the sensory portion of the cord.

The experiments from which the above conclusions were derived were made as follows: The frog was first pithed, and all the tissues of the left posterior leg, except the nerve, were then ligated, so that all access of the poison to the limb might be prevented. The frog was then allowed to recover from the shock; after which reflex action was tested by immersing the posterior extremities in a two per cent. solution of sulphuric acid. The frog's legs were carefully washed of the acid solution by a gentle stream of water after each test. After reflex action had ceased, the cord was exposed in the dorsal region, and stimulated directly by the electric current from a single-gravity cell and DuBois Reymond induction-coil.

The course of the paralysis having been ascertained from the preceding experiments, the question presents itself: To what are the convulsions, which were noticed in the above experiments, due? I may here add that my results have not been at all conclusive upon this subject, owing partly to the fact that at this time of the year (November) the frogs are in poor condition, and also to the fact that the paralytic phenomena were at all times predominant. That the convulsions are not of cerebral origin is proven by direct experiment, they having been observed in pithed as well as in normal frogs. It was also observed that they occurred in the posterior extremities after the cord was bisected in the dorsal region. Whether they are of spinal or muscular origin I have not been able to decide from the experiments which I have made. I have, however, seen that in experiments where the nervous connection only was maintained in the left posterior limb no movements whatever occurred in that limb when they were occurring in the other parts of the body, while in another experiment, under precisely similar

circumstances, active movement occurred in the protected limb. In other experiments, when the nervous connection of the limb was severed, precisely opposite results again occurred. That the drug may act primarily as an irritant to the muscular and nervous tissues seems probable.

The conclusions at which I arrived from my experiments are, that the ultimate action of the *ustilago maidis* upon the nervous system is that of a universal depressant, producing a diminution and final extinction of all reflex and volitional phenomena, with the early induction of narcotism. That the loss of reflex activity is due to the paralysis of the sensory (receptive) portion of the cord. That the motor portion of the cord is also depressed, as well as the motor nerves. That it is also probable that the sensory nerves share in the general paralysis.

That death is due to arrest of respiration, though in exceptional cases it may be due to the diastolic arrest of the heart.

The marked similarity between the action of this drug and that of potassium bromide is worthy of note, although in my experiments I have never observed voluntary movements occur after the suppression of reflex activity, which are so commonly observed in poisoning with the potassium bromide. Though the possibility of such movements is evident, from the fact that the motor portions of the cord and the efferent nerves remain sufficiently intact in the early stages of the poisoning to convey impulses after the complete paralysis of the sensory portion of the cord. That voluntary movements, or, at least, movements the impulses of which have their origin in the cerebral ganglia may occur, is readily conceivable. The fact that they do not occur is conclusive proof, I think, that the cerebral ganglia are early depressed in the poisoning, and finally paralyzed. This is further shown in the profound narcosis seen almost immediately after giving the poison.

In the early part of this paper it was stated that the *ustilago maidis* was classed with the oxytocics, and it has also been asserted to possess medicinal properties resembling those of ergot of rye. Without further discussion I will place in parallel columns a summary of the conclusions drawn from the results of the present research, with those conclusions arrived at by the different investigators on the action of ergot of rye and that of potassium bromide, which it so closely resembles in its physiological action on the nervous system.

USTILAGO MAIDIS.

Nervous system: Cerebrum consciousness in frogs lost.

Spinal cord: The sensory portion of the spinal cord is first paralyzed, the reflex paralysis being due to this cause. The motor portion of the cord, as well as the motor nerves, are also depressed, and ultimately paralyzed. That it is also probable that the sensory nerves share in the general paralysis.

POTASSIUM BROMIDE.

Cerebrum, spinal cord, and nerves: "The evidence is, I think, sufficient to prove that bromide of potassium affects all parts of the nervous system of the lower animals, but that the cerebrum, the motor tract of the cord, and the efferent nerves are the last portions to be affected; that the most sensitive to its action is the receptive portion of the cord, and next to this the peripheral ends of the afferent nerves." (H. C. Wood's Therapeutics, 1880, p. 325.)

ERGOT OF RYE.

"The above summary of the general symptoms caused by poisonous doses of ergot shows that the phenomena are mainly paralytic in nature." "It would seem that the nervous system must bear the brunt of the poison." "It is probable that the chief action of the drug is upon the nerve-centres." (H. C. Wood's Therapeutics, 1880, p. 543.)

RED SULPHUR SPRINGS, MONROE COUNTY, W. VA.

BY L. B. ANDERSON, M.D., NORFOLK, VA.

THOUGH I have been acquainted with the medicinal virtues of these waters for many years, I have visited the Springs only once, and then for a very brief period. I am now unacquainted with the owner or proprietor, and know not what are the facilities provided for reaching them, or for the accommodation of guests. When I visited them, some five years ago, I embarked on an ambulance drawn by two horses, in company with four passengers, at Lowell Station, Chesapeake and Ohio Railroad. The route was mountainous, picturesque, and fascinating. Emerging from a forest on a high mountain, we caught the first view of the Springs in a valley a mile or more to the south of us, and sweeping rapidly down the declivity, we were soon landed at the office of the spacious hotel on the eastern side of the valley.

The grounds occupy a valley running north and south, not over a hundred yards wide and a few hundred yards long. It is bounded on the east by a mountain, rising at an angle of say 40°, on the base of which are located the most commodious buildings. On the west rises another mountain, at an angle of 67°, high into the air, at the base of which sweeps a small creek, which affords fine facilities for sewerage. Bordering on that stream is the long western range of buildings, at the southern extremity of which are the springs, two in number, and slightly different in their composition. They are very neatly and substantially walled, and present a very attractive and enticing appearance. Standing in the long portico of the eastern hotel and looking westward, just in front stands the long row of western buildings, behind which rises the steep and lofty mountain, covered with trees

and rich foliage. To the left are the springs very near by, and a hundred or two yards to the right is the abrupt termination of the western mountain, around which sweeps the valley creek to empty into quite a bold stream coming down the valley from the right and north, to hide itself behind the western mountain.

The accommodations, when I was there, were very satisfactory. Beef, bacon, fowls, milk, and butter of the very best quality were abundant, and vegetables of all kinds plentiful. The water is perfectly clear, sparkling with disengaging gases, and very cold. Though it is quite strong in sulphurous and saline taste, it is not as offensive as most other mineral waters, and, after their use for a day or two, no other water is desired. Most persons experience a peculiar exhilaration after drinking a free potation, somewhat akin to champagne. We are now prepared to enter into an analysis and examination of their medicinal qualities.

Many years ago Dr. William Burke, of this State, who resided at the Red Sulphur Springs, wrote the fullest account of what was then known of their qualities that I have ever seen. An analysis of the waters, which, though probably as accurate as the state of chemical knowledge at that period could secure, was evidently very imperfect, is given in his essay. The first is from Prof. Rogers, and is as follows:

"Gaseous contents in an imperial gallon:

Sulphuretted hydrogen	4.54
Carbonic acid	8.75
Nitrogen.....	4.25

Solid contents consisted of sulphate of sodium, lime and magnesia, carbonate of lime, and muriate of sodium. Besides these ingredients, the water contains, in considerable quantity, a peculiar organic substance, which, mingled with sulphur, is deposited on the sides of the spring, and seems to increase by a species of organic growth."

The next analysis was furnished by Dr. Hays, of Roxbury, Mass., and is, in brief, as follows :

"Fifty thousand grains, or about seven pints, of the water, when evaporated, left a solid residuum of 20.56 grains of a light yellowish matter, which, when subjected to a still higher temperature, was reduced to 17.55 grains. This residue contained

Silicious earthy matter, with traces of iron and alum	0.70
Sulphate of sodium	3.55
Sulphate of lime.....	4.50
Carbonate of magnesium.....	4.13
Sulphur combined with organic matter.....	7.20

This last peculiar sulphur compound has never been described, if, indeed, it has ever been met with. Out of contact with air it forms a permanent solution. In its decomposition ammonia is formed, and hydro-sulphuric acid is liberated ; if heat be employed, sulphur is liberated. The gaseous constituents are,—

Carbonic acid	5.750
Nitrogen	6.916
Oxygen.....	1.201
Hydro-sulphuric acid gas.....	.397."

Dr. Burke gives the testimony of many who had tested the virtues of these waters on themselves and their patients, from which we extract the following :

"Dr. Scott, a distinguished physician of Kentucky, says, 'For three months my pulse had not been less than 100 strokes per minute in the morning and 110 in the afternoon. In three days after beginning the use of the water it was reduced to 70 in the morning and 80 in the evening, etc.'

"Dr. Henry Hunt, of Washington City, says, 'I was attacked with a slight hemorrhage from the lungs, attended with other symptoms, indicating a diseased state of those organs. On the evening of my arrival at the Springs I commenced the use of the water. I had evening exacerbations of fever, pulse 115, and night-sweats. In ten days my pulse was reduced to 78 in a minute. I could, by increasing or diminishing the quantity of water, act at will on my kidneys or bowels. It exerted the most soothing and soporific effect, and often gave quiet rest when potent anodynes had failed. I felt the good effects for months after leaving the Springs.'

"Dr. R. H. Bradford, of Virginia, says, 'The effect of this water in reducing the pulse is one of the numerous singular and powerful properties belonging to it. It lessens

arterial action to such a degree that it seldom fails to remove fever, pain in the chest, and difficult breathing. It may be taken with greater advantage in pulmonary troubles than any other remedy I have ever seen used for them.'"

Cases are given in which bronchial and laryngeal troubles of grave character were entirely relieved, while severe cases of tubercular pulmonary infiltrations and abscess were greatly modified in their character and stayed in their progress.

My own observations of the remedial powers of the Red Sulphur waters began with a young man who had grown to the height of six feet five inches in nineteen years, whose physical force was so feeble that he scarcely developed vitality above that of a delicate vegetative existence. His lungs were weak, his muscles were slender and relaxed, his digestive powers were feeble, his pulse was frequent, and he presented all the more striking indications of incipient phthisis. He visited these Springs, and remained six months, during which time there was an entire renovation in his physical constitution, and his mental as well. From a spindling, emaciated, feeble, overgrown youth he became a robust, muscular, and vigorous man, weighing more than two hundred pounds, which weight he has retained through all the years of a college curriculum, and other draughts upon him, till this time, now many years.

I have prescribed these waters to patients laboring under advanced phthisis pulmonalis with decided comfort, and frequently a great modification of their most distressing symptoms, and that, too, when the water was used from bottles which were transported hundreds of miles.

While at the Springs I saw an intelligent lawyer from North Carolina, who informed me that five years before he had been so reduced by a harassing pulmonary trouble, attended with decided hectic, that he was compelled to relinquish his practice. He came to the Springs in such a feeble state that he feared he would not survive the trip. But he was so much benefited that he was enabled during the following winter to resume the lighter duties of his profession. He had made annual pilgrimages to the Springs, and at the time I saw him he had just paid his fifth visit. With each annual visit there was a marked improvement in all his symptoms, and he was then able to perform all the work needful, both in office and at the bar, to meet the requirements of an arduous calling. I

met there with a distinguished minister of the gospel who had a laryngeal trouble of such a character as to incapacitate him for public speaking. He had not used the waters more than ten days before he was entirely restored. I saw children who were brought there in an advanced and emaciated state of cholera infantum, who were said to have improved in twenty-four hours after reaching the Springs.

It is to be regretted that no recent analysis of the water has been made. Some one has conjectured that the "yellow, undefinable mass," which is formed by precipitation on exposing the waters to the influence of the air, contains iodine, on what ground I know not. But there seemed to be a settled conviction in the minds of those who had the best opportunities for knowing, that such is the case. Whatever be the constituents of these waters, there can be no question of their wonderful sanative powers in affections of the throat, larynx, trachea, bronchia, incipient tuberculosis of the lungs, and all the mucous tissues extending into the stomach, bowels, liver, kidneys, bladder, and uterus. Much of the benefit which they exert results no doubt from the promotion of the secretions, as Dr. Hunt informs us, from the liver, kidneys, and bowels. So soon as his liver and kidneys were brought into vigorous and healthful exercise, and the bowels were freely acted on, his pulse became slower and steadier, and all his symptoms were greatly improved. But one peculiar effect of the waters—that is, its soothing and soporific influence—cannot be accounted for by any known constituent; and yet there can be no question that this peculiar property is wonderfully promotive of its sanative effects. One of the chief sources of irritation in all chronic pulmonary troubles is the agitation of the inflamed tissues from frequent paroxysms of coughing. Another is the prolonged wakefulness produced by this source of trouble. The great difficulty which confronts the medical man in meeting these troublesome issues is, that such agents as are at his command, which are calculated to exert a soothing and soporific effect, are constipating and astringent, or debilitating to the digestive organs. In this water we have an agent which not only quiets the cough and soothes the local irritation, but produces sleep, promotes the secretions, and gives tone and energy to the digestive organs, upon the activity and integrity of which so much depends the reparative process. From this stand-point alone these waters are worthy of all commendation.

While I was at these Springs I was struck

with the entire want of system manifested by those who were using the waters and mostly needed their potential effects. No doubt many used the waters most injudiciously, and hence failed to receive a moiety of the benefit they might otherwise have derived. And yet there were numbers there who, despite their indiscriminate use, were loud in their praises of their curative powers, and even resolved to make annual pilgrimages to these Springs. My own convictions are, that among all the valuable mineral springs of which the Virginias can boast, the Red Sulphur does and must ever stand pre-eminent. And for scorbutic troubles, whether in the glands, lungs, throat, or eyes, I believe that these waters are without an equal on the globe.

COCAINE AS AN ANÆSTHETIC IN CIRCUMCISION.

BY JOHN MADDEN, M.D., ASHLAND, WIS.

ON February 2 I circumcised a young man, æt. 28 years, possessing a very nervous temperament, using a four per cent. solution of the muriate of cocaine as an anæsthetic.

Four points, practically equidistant, were selected upon the line of the intended incision, the hypodermic needle inserted, and about one-fourth of a drachm of the solution was injected beneath the skin at each of these points. A piece of absorbent cotton was then saturated with the fluid, and placed in contact with the preputial mucous membrane.

Testing the sensibility of the parts from time to time, by pricking with a needle, in about twenty minutes the sense of feeling was almost entirely abolished. The foreskin was then drawn forward, held between the blades of a pair of dressing forceps, and quickly ablated with a knife. The patient declared that the operation gave him no pain nor sensation of any kind, excepting in one small place on the left side. I noticed, however, that the solution had filled the subcutaneous tissue beneath this place. The mucous membrane was next caught up, and quickly cut off with a pair of scissors. Its sensibility, though very much lessened, was not entirely destroyed, and the patient complained of some pain. The operation was completed by stitching the mucous membrane and integument together, the former growing more painful towards the end of the operation, while the latter preserved its anæsthesia.

No constitutional symptoms were observed from the absorption of the cocaine.

*TAPEWORM ACCIDENTALLY REMOVED
BY CHLOROFORM.*

BY W. H. BENTLEY, M.D., LL.D., WOODSTOCK, KY.

IN September, 1885, I had occasion to visit a friend in an adjoining county on non-professional business. As his wife was in ill health, he wrote me a request to bring some medicine. Accordingly, I took along my usual travelling outfit of drugs. At 10.30 P.M. one of my friend's tenants sent his son in great haste to request my immediate attendance. The young man stated that his mother had had chills for several weeks, that a physician had seen the case several times, had "stopped" the chills each time, but they had returned again. Lately, however, she had been using Ayer's ague cure. This, he said, was the first chill during two weeks, and that it had already lasted between two and three hours.

I hastened to the patient to find her gasping for breath, radial and temporal pulse imperceptible. Surface and extremities cold, and the entire person bathed in a profuse clammy sweat. There was evidently no time to be lost, so, calling for some sweet milk, I at once administered a drachm of chloroform in about an ounce of milk.

The patient began to rally almost immediately, and at the end of forty minutes from the ingestion of the chloroform the circulation appeared normal. I have often administered chloroform during the cold stage in intermittent fever, and I have never known any marked degree of fever to supervene, and this case was no exception to the rule.

At half-past eleven o'clock, a little over one hour from the administration of the chloroform, I gave her 2 grs. podophyllin, 5 grs. bicarb. sodium, and 10 grs. quinine sulph. in half a wineglass of water, directing an ounce of castor oil, with half ounce spts. turpentine, to be given on arising in the morning. The excitement and worry of the occasion kept the family awake so late that they did not arise until the sun was an hour or two high, so the oil and turpentine were not given until 8 A.M. at least. At eleven o'clock I called, preparatory to leaving for home. When I arrived I was told that the patient was "over the vessel." In a short time I was admitted. You may judge of my surprise when I exam-

ined the discharge and found a tapeworm thirty feet long.

This is not the first tapeworm which I have removed by means of chloroform, but it is my first *accidental* removal of one.

Hitherto I always gave the chloroform, and followed directly with a large dose of castor oil and a full dose of croton oil combined, supposing that the chloroform only stupefied the worm, but to my mind the details of this case tend to show that it actually kills the parasite. It was dead when passed, and appears from the statements of the patient to have been in a coil or knot, for she said it gave her intense pain.

Did the chloroform kill the worm, or did the podophyllin and quinine do it? Could it be possible that it died in consequence of the sickness of its hostess?

I once had an inveterate case of typhoid fever, lasting sixty-three days. The subject was a man, 35 years of age, and the case occurred within a few months after I began to practise medicine. When the patient began to recover, his convalescence was at first extremely tardy. After a few days he began to pass sections of tapeworm with his stools. This continued during several days, and then the head came away. The portions were in an advanced state of decay. I was then afraid to give a cathartic to clear the bowels, lest his diarrhoea might return, so I have since found that I left him exposed to real danger by leaving him so long in retention of the putrid mass.

I have often wondered whether in this case the tapeworm died from the effects of the disease, the medicines, or from starvation.

CHIONANTHUS VIRGINICA.

BY JOHN A. HENNING, M.D., GARNETT, KANSAS.

THIS is a shrub or small tree growing along creeks or rivers, mostly in the Southern States. Leaves obovate, lower surface downy; flowers, loose panicles in early summer; petals about an inch long, and the fruit blue-purple, with a bloom; common name, *fringe-tree*. The bark of the root is the only part employed. It is made and used in the form of a fluid extract. Dr. Justice has found saponine in it, but the plant has not come into general use.

Having used the fluid extract of *chionanthus* extensively in my practice for the last ten years, I can speak from personal experience as to its therapeutic action.

To simply say that a good article of the fluid extract, given in doses of half to one fluidrachm two or three times per day, is an aperient, cholagogue, diuretic, and an alterative, would but imperfectly describe its physiological effect in the human system. Of course, we should and must know its therapeutic effect, but we also must know when and in what pathological condition the system is in before we can prescribe it rationally. Some writers have said heretofore that chionanthus is a specific in jaundice. Although I believe there are no specifics for any disease, my experience warrants me in saying that this remedy is one of the best in jaundice that I have ever prescribed. Chionanthus is indicated in all cases where there is a yellow, jaundiced condition of the skin. While it is but a feeble hepatic stimulant, I think it is one of the most reliable remedies in congestion of the portal circulation that we have. I have seen this verified in a large number of cases. It also seems to stimulate the lymphatic system, and to possess some diaphoretic and diuretic action.

If the liver is torpid, other hepatic stimulants should be used, such as podophyllin or leptandrin. The following prescription is the form in which I use this remedy :

R Ext. fld. chionanthi, \mathfrak{z} i;
Podophyllum, \mathfrak{z} i;
Potass. acetat., \mathfrak{z} ss;
Aque, q. s. ad. \mathfrak{z} iv. M.

Sig.—Teaspoonful every three to six hours.

In all jaundice condition this prescription has never failed me. However, other remedies may be indicated, as jaundice is but a symptom, not a disease, and many causes may produce it.

THE USE OF NITRITE OF AMYL IN THE SEVERE PAROXYSMS OF WHOOPING-COUGH.

BY DR. MORRIS J. LEWIS, PHILADELPHIA.

E. B., female; æt. 13 weeks; breast-fed; a well-formed, healthy baby; rather small, and weighing about nine and one-half pounds.

At the age of seven weeks, having just recovered from the effects of a perfectly normal vaccination, she contracted whooping-cough from her brother, whose case had been one of the lightest character, rendering the diagnosis impossible for over two weeks. The

infant's cough for the first week was but slight; but during the second week it began to show the characteristic symptoms.

The child was placed upon a mixture of belladonna and alum every three hours, and progressed favorably until the night of February 12, towards the end of the second week of the disease; it was then seized with a violent paroxysm of coughing, became purple in the face, and finally, according to the mother's statement, ceased to breathe. I was immediately sent for; but before I could answer the summons the mother had thrust the child out of the window into the cool, damp air of a foggy night. This procedure was immediately followed by an inspiratory effort, and the child breathed again. When I arrived the child was in an exhausted state, but was breathing regularly. After this, until the 22d of the month, but one other slight attack of this nature occurred. By this time the child was coughing in a perfectly typical manner. The medicine was continued, but in slightly larger doses, the child taking about the $\frac{1}{2}$ gr. of extract of belladonna in the twenty-four hours.

On the night of the 22d there were three severe paroxysms, during all of which I was present.

The child would awaken with a series of violent expiratory coughs, with scarcely an inspiratory effort between them. Finally, an expiratory spasm would occur, lasting fully fifteen seconds, during which the child would struggle and become perfectly livid. This would be succeeded by complete collapse, with entire suspension of respiration, due probably to exhaustion of the respiratory centre.

During the last two of these attacks I administered ether by inhalation, and believe that thereby the spasmodic stage was somewhat shortened, but the subsequent collapse was so severe that I was obliged to resort to artificial respiration, and once had to continue it for ten minutes, as during that time there were but one or two feeble attempts at inspiration. The evening before I had placed the child on the $\frac{1}{10}$ of a grain of sulphate of atropine every three hours.

Dr. William Pepper then saw the case with me in consultation, and suggested combining a small amount of nitrite of amyl with the ether to prevent if possible the stage of exhaustion. This combination seemed to have a good effect; but, as the amount of ether required seemed to render the child drowsy and disinclined to nurse, I gradually dimin-

ished the proportion of ether until the mixture contained one-fourth part of nitrite of amyl. This mixture was kept in a small vial, and with each cough the end of the finger was wetted with the mixture and held close to the child's nose and mouth, so as to catch the first inspiratory effort. Thus administered, the child practically got nothing but nitrite of amyl. After the commencement of this treatment the child never had another attack of exhaustion, and the severity and length of the paroxysms seemed to be materially lessened, although the child coughed just as frequently, the number averaging fifty in the twenty-four hours, the amyl being given each time.

No untoward effects were at any time noticed, even when once I held the bottle, containing at least 10 drops of amyl, to the child's nose.

It was difficult to judge of the amount of flushing produced by the drug, on account of the flushing caused by the cough.

This treatment was continued for two weeks or more, and during this time the sulphate of atropine was continued in doses averaging the $\frac{1}{100}$ of a grain every three hours.

I am confident of the beneficial effect of the nitrite of amyl in this case, and, although one swallow does not make a summer, I think the drug will be found of use in analogous cases; the tendency to apoplexies of various kinds, and some of the other complications, being also probably lessened thereby.

Dr. John M. Taylor, who assisted me in watching the case, is also positive of the good effect produced.

In the short time that I have had to look up the literature of the subject, I cannot find that nitrite of amyl has been used in whooping-cough, nor has anybody that I have spoken to on the subject known of its use.

By diluting the nitrite with ether or alcohol it can be administered in any dose required, and could more easily be placed in pearls than the pure nitrite.

By placing it in a bottle with a small top, that can be covered easily by the finger, it can be almost immediately administered by simply wetting the tip of the finger by inverting the bottle.

The child is now doing well, and has had no complication other than a slight umbilical hernia.

1218 WALNUT STREET.

YERBA SANTA AS A VEHICLE FOR QUININE.

MR. J. D. A. HARTZ proposes a preparation of yerba santa, in addition to those already on the market, for disguising the taste of quinine (*American Druggist*, March, 1886). One fluidrachm of this preparation is said to obliterate the taste of two grains of quinine.

The first step in preparing it is to exhaust twenty-five ounces of powdered yerba santa (the powdering can be easily accomplished in a drug-mill to a degree of fineness that sifting can be dispensed with) with a menstruum of one volume of alcohol and two volumes of water, regaining the alcohol by distillation, and reducing the remainder over a water-bath to twenty-five fluidounces. In the still, and also in the evaporating dish, will be a copious deposit of resin which seems unessential for the purpose, and is designedly separated, as an alcoholic fluid extract of yerba santa would produce an unsightly mixture.

The next step is the preparation of a syrup by intimately mixing in a mortar three hundred minims of oil of sweet orange with three ounces of finely powdered phosphate of lime, gradually adding three fluidounces of alcohol, and afterwards, also very gradually, eighty-five fluidounces of water. Transfer the mixture to a bottle, add one hundred and fifty minims of purified chloroform, and shake vigorously for half an hour, filter, and dissolve in the filtrate one hundred and forty ounces of sugar, add the fluid extract and enough water to make two hundred fluidounces.

POISONING BY VASELINE.

MR. H. S. ROBINSON states in the *British Medical Journal*, February 13, 1886, that he was summoned to see three children aged from 8 to 14 years, who had each been given about half a teaspoonful of vaseline on sugar the previous evening, as they suffered from sore throats. Soon afterwards, whilst in bed, they were all seized with pain in the knees and cramps in the lower extremities, together with severe vomiting, which continued for eight or nine hours. On visiting them the next morning the severity of the symptoms had passed off, although the eldest child was still inclined to vomit, and was in a somewhat collapsed state. There were no febrile symptoms, and they all quickly recovered their usual health. No other cause for these symptoms than the administration of vaseline could be discovered.

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Leading Articles.

HOPEINE.

THE remarkable discovery was announced about a year ago of a new alkaloid to which are due the narcotic properties generally attributed to hops. To this alkaloid the discoverers—Williamson and Springmuhl, of London, England—gave the un-euphonious name of hopeine, driven to this alternative, it would appear, by the circumstance that the names lupulin and humulin, which the ordinary practice in scientific nomenclature would have suggested, were pre-occupied. In view of the fact that previous investigators had never found in this drug any such alkaloid, the announcement was received with some incredulity, but a ready explanation was forthcoming. The new alkaloid, it was stated, is contained in ordinary cultivated hops only in very minute quantities. In the wild American hop, however, it was said to be present in the proportion of fifteen parts in ten thousand, or about ten grains in a pound. It was stated, however, that in practice the yield was only three or four grains from a pound of the crude material.

The process by which the alkaloid was obtained was totally unlike any recognized process for extracting alkaloids. The hops were to be exhausted with a sixteen per cent. solution of glucose in water, with addition of acetic acid. The solution, after treatment with animal charcoal, was to be evaporated, to separate the glucose by crystallization (!). The residue was then to be treated with absolute alcohol to obtain the crude alkaloid. We are quite unable to conjecture why a solution of glucose should have been selected for the extraction of the alkaloid, unless it were to deter experimenters from attempting to verify the alleged discovery.

Specimens of the new alkaloid were transmitted by the discoverers to physicians for physiological and clinical experiment, and reports soon appeared, from which we learn that the action of hopeine closely resembles that of morphine, both qualitatively and quantitatively. It strikes one as a little singular that the first reports, which come respectively from Dr. W. T. Smith, of London, and from Dr. M. Roberts, of New York, should have been published in German, in a Berlin medical journal, the *Deutsche Medicinal Zeitung*. The physicians named would seem to be remarkably free from the itching for fame which generally prompts men who happen to be the first to have penetrated any of the secrets of nature to proclaim in the ears of all their neighbors their discovery. That these gentlemen, however, acted in perfect good faith in their respective communications to the (distant) public there is no reason to doubt.

It was not long after the discovery of hopeine was announced before it became known that the new alkaloid was in the market as the product of the London Concentrated Produce Company. It commanded, naturally, a high price, for it could only be made from wild hops imported from North America. The latest statement of the manufacturing company is that they employ the lupulin from *Arizona* hops as the source of the alkaloid. If this is true, we only wonder that they can afford to sell it at so low a price.

When we read, however, of the use of American wild hops, put up in pressed packages, we in America rub our eyes and wonder how it is that we are not better informed about matters here at home. We had always innocently supposed that pressed hops were obtained from the cultivated plant grown this side of the Mississippi.

The therapeutic action of hopeine agrees,

according to all observers, in nearly every particular with that of morphine. Williamson assigned to it, however, a different chemical formula, $C_{18}H_{20}NO_4 + H_2O$, that of morphine being $C_{17}H_{19}NO_3$. It is noticeable that the difference is so small that experiments must be conducted with the greatest care to make it certain that it is anything more than the result of errors of observation. Williamson has himself now admitted that there is also present in commercial hopeine a variable proportion of an alkaloid isomeric with morphine, to which he gives the name of isomorphine. This discovery, however, he seems to have made only after hopeine had been made the subject of critical examinations in France and Germany, and had been shown to agree in chemical behavior in every particular with morphine.

The facts, as they appear from the full report of Dr. Dujardin-Beaumetz, of Paris, are that the article sold as hopeine differs from morphine only in the circumstance that it has a hop-like odor and flavor, which, however, is easily removed by the simplest process of purification, showing that it had been intentionally introduced into or retained in the preparation. Some samples of the alkaloid, indeed, had a flavor of oil of wintergreen in place of that of hops. Dr. Dujardin-Beaumetz is driven by the logic of the facts as revealed in this investigation to conclude that either morphine is a constituent hitherto strangely overlooked in chemical examinations of hops, or else that the article sold as hopeine was in reality the product of papaver somniferum; in other words, ordinary morphine commanding, under a fictitious name, ten times its legitimate price.

The profession is to be congratulated on the failure of what we cannot regard otherwise than as an infamous attempt at a wholesale fraud. There is food for thought in the fact that such a scheme, based upon the assumption that physicians were too little familiar with the scientific facts of chemistry to discover even so barefaced an imposition, was so nearly successful. On the authority of Dr. Hoffman we are assured that prominent medical men in New York have become identified unwittingly with a still more outrageous scheme, if it is true that kaskine is, as the doctor avers, nothing but saccharum album. We believe it is the physician's own fault if he is thus victimized. He has allowed his mind to become confused with regard to his relations to the art of pharmacy. To the pharmacist he has properly relegated the de-

tails of the processes by which his own purposes with regard to the use of remedies can be carried out. He should not expect the pharmacist to go beyond this sphere, and offer to him new combinations and new remedies, unless it be done in the way of modest suggestion. In fact, the pharmacist is now urging upon him, under one specious pretence or another, a class of preparations which are no whit better than the secret nostrums commonly known as patent medicines. If the physician has so little independence as to accept these ready-made prescriptions, whose composition is either wholly concealed or only vaguely shadowed, and generally falsified, in their alleged formulæ, he must expect that men who are unscrupulous about the means of acquiring riches will take every advantage of him; and he will have the mortification to find before long that his profession is selected by sharpers as the most favorable field for confidence operations.

HOW CLINICIANS ARE TRAPPED.

A CURIOUS phase in pharmaceutical history is the alterations which from time to time occur in drugs, without change of the commercial name. It is a very odd commentary upon surgical therapeutics that, in the course of one or two decades, an entirely different drug should be substituted for the old pareira brava without the surgeons ever suspecting the alteration. A similar substitution occurred in the case of creasote. As the products of coal tar became cheaper and cheaper, carbolic acid little by little replaced creasote, so that there was a time when there was no creasote at all in the market, the article which was everywhere sold under such name being nothing more or less than impure carbolic acid. Finally, some astute observer discovered the substitution, and pointed out that the two products could be readily distinguished one from the other by their odor, creasote having the peculiar smell of smoke. This led to the discovery by many dentists of the great superiority of creasote over carbolic acid as a nerve-obtunder. So long, however, as these gentlemen were not told of the differences of the drugs they never detected the substitution by their clinical results. In regard to pareira brava, it would probably be a shrewd guess if we would consider that the activity of the decoction depends upon the water which is present, and that, as the surgeons use the same water with the roots of

Cissampelos pareira and *Chondodendron tomentosum*, the effect was identical with those, or, in other words, that the water is the most potent part of the two decoctions. Creasote and carbolic acid are undoubtedly very active agents, but their physiological activity seems to run in identical channels.

A recently discovered substitution has resulted in much, if not all, of the caffeine in the markets being theine. The alkaloids theine and caffeine have long been supposed to be identical by chemists and physiologists, but the recent researches of Dr. Mays indicate very strongly that these two alkaloids are not the same thing. Damaged tea-leaves exist in commerce in such large quantities, and can be purchased at such low rates, that manufacturers have been using them very largely for the production of the alkaloid. The medical practitioner prescribes by name, so that the demand has been for caffeine rather than for theine, and the pharmacists have largely supplied theine when the doctor wrote for caffeine. This substitution has not been detected by the general clinician, an argument, of course, for the belief in the identity of the two alkaloids,—an argument which, however, may rest upon the lack of observation on the part of the clinician. Readers of the *GAZETTE* will remember that some time ago we called attention to different results which we had obtained from the use of different makes of caffeine, and detailed a case in which caffeine, as sold by one of our most reliable druggists, failed to do good, although the caffeine prepared by Merck was successful. The trial in this case was made several times with similar response. According to the *American Druggist*, Merck's caffeine is sometimes caffeine and sometimes theine, but it is possible that the samples of Merck's caffeine which we used in this case happened to be pure caffeine.

In 1840, Martins asserted that guaranine is identical with caffeine, and his verdict has been generally accepted ever since. It is probable that the manufacturer, as he labels theine caffeine, also labels caffeine or theine guaranine when the call is for guaranine. This is all wrong. Guaranine should be prepared from guarana, theine from tea, and caffeine from coffee, and the price for each alkaloid be fixed according to its cost. We are rapidly learning the lesson that pharmaceutical chemistry, as well as practical therapeutics, must be continually unlearned as well as learned. It has not been long since we all believed that the chemists had proved that the

alkaloid of hyoscyamus was identical with atropine. Now, we know that there are at least two alkaloids in hyoscyamus, neither of which is atropine. By all means, then, let us have honest labels as well as fair prices, and not call a product something which it is not, although the chemistry of the day says it is the same thing as that which it is not.

MATERIA MEDICA IN MEDICAL COLLEGES.

IF there be one branch of medicine more than another that is a bugbear to medical students, it is materia medica. The facts of this branch of knowledge, for it is not a science, constitute an immense mass of disjointed, disconnected information. Heap upon heap to be swallowed, digested, formed into the brain-tissue of the unfortunate student for use on examination-day, most of it to be ejected the next week upon the ever-growing waste-heap of useless knowledge, very little of it having any practical importance to its possessor in after-life.

In the more advanced American colleges the uselessness of the details of materia medica proper is beginning to be appreciated by teachers, but in England it would seem that the old-fashioned notions still prevail, so that it is still believed that a doctor must be at the same time an apothecary. In our opinion he might as well be expected to be a surgical instrument maker. What value is it to the physician to know that the extract of Calabar bean comes from a plant that rejoices in the name of *physostigma venenosum*? The practical medical fact is as to the effect the extract has on the human organism when put into it. Why should a man be expected to know that cupræ bark comes from certain plants belonging to the genus *Remijia*, growing in Brazil? Knowledge of the physiological and therapeutical effects of quinine, and not of its natural history, add keenness to the blade with which the doctor fights disease.

The knowledge that the world possesses grows enormously. The number of facts comprised in the sum total of human acquirement is probably many hundredfold more than fifty years ago. Every decade adds enormously to the number of points which have to be covered in the study of medicine. Each year it becomes more and more necessary to cut out unessential matter. The apothecary was specialized from the physician to perform a definite task, and if the doctor is expected

to know the apothecary's business, the apothecary might as well cease to exist.

We have been led to these remarks by looking over a skilfully put together little book, which has been prepared by Dr. Prosser James, of London, as "A Guide to the British Pharmacopœia of 1885," to assist the students in fitting themselves for the examinations required in the various English colleges. With the spirit of the preface of this book we agree entirely. Dr. James says,—

"The cry for restricting the area of examinations is unheeded, and occasionally examiners pelt students with materials which they employ for no other purpose. Such highly-developed boys have lost all respect for the opinion of frogs."

We are sorry for the frogs, and still more sorry for those who are served by the physicians into which the frogs are to be transformed. For you cannot get more than a pint into a pint measure, and if the young brain is overloaded with matter of little importance it will be underloaded with that which is valuable. Materia medica courses, except of the most elementary character, are, in our opinion, out of date in medical colleges, and as despicable as cast-off mediæval armor. Elaborate, profound study of the physiological action of medicines and of their therapeutic application is the food upon which the student frog should be nurtured through the medical developmental stage.

THE REACTION OF THE GASTRIC SECRETION AND ITS RELATION TO CHOLERA INFECTION.

THE controversy between Koch and Klein as to the etiology of cholera has again been opened through the publication of a paper with the above title in the *Brit. Med. Journal*, March 13, 1886, by Dr. Matthew Hay. It will be remembered that Koch attributed the cause of cholera to the comma-shaped bacillus which obtained access to the system solely through the alimentary canal; and that, further, the vitality, and therefore the virulence, of this comma-bacillus was destroyed by an acid. The principal objection which Klein offers to this view, as to the etiology of cholera, rests upon the facts that, if the comma-shaped bacillus is the cholera virus, and the alimentary canal is the sole entrance of the cholera virus, then the other proposition, that the cholera bacillus is destroyed by acid, must fall to the ground. For,

claims Dr. Klein, the reaction of the stomach is always acid. Therefore either one or the other of these propositions must be false,—either that the bacillus is destroyed by an acid, or that it is the cause of cholera, and its entrance is solely through the alimentary canal. Now, it has been well proved that an acid does destroy this bacillus, and therefore Klein concludes that the other propositions must be false. It is at once seen, however, that Klein's argument is based on false premises; for it is by no means necessary to assume, as does Koch, that the stomach must have been previously so deranged that its contents and secretions are not acid, since it is known to nearly every one that the reaction of the stomach, except through the periods of digestion, is not acid, but is alkaline; therefore the principal objection which Klein urges against Koch's theory falls to the ground. This fact as to the reaction of the contents of the stomach has been again brought into prominence through the paper of Dr. Hay above alluded to, and in which he again has experimentally demonstrated that the reaction of the stomach in fasting, after the administration of various neutral salines, or even after the ingestion of water, had invariably an alkaline reaction. His experiments on the ingestion of water are of special importance, since he found that in animals (the cat) the reaction of the stomach when empty, or when filled only with water, is alkaline; that the inference from this fact that a similar state of affairs will hold in the case of man is supported by the fact determined by Ewald, that when water was introduced into the stomach of the fasting man, the contents of the stomach had a neutral or alkaline reaction so long as it remained in the stomach. This he ascertained by removing portions of the water from time to time by means of a stomach-tube. The practical application of these facts to the bacillus theory of cholera is very evident; for, it being acknowledged that the bacilli will be destroyed by an acid, if they are swallowed when the stomach contains food, they run the chance of being destroyed by the acid of the gastric contents. If, on the other hand, they be swallowed in water, as it is believed ordinarily to be the case, and the stomach be previously empty, then the bacilli will pass through the stomach into the intestines, where, according to Koch, they find a suitable nidus for their development. The same will happen if they be swallowed in saline solutions, as mineral waters, etc. It is evident, then, that if we accept this theory as

to the cause of cholera, it is only necessary for its prevention to keep the stomach constantly acid, and this will, of course, be attainable by keeping the stomach constantly in a state of activity; for, as long as food remains in the stomach, the reaction of the stomach must be acid. Consequently, the frequent ingestion of food in small amounts may possibly serve, by keeping the stomach acid, to prevent the passage of the bacilli. It is, of course, to be remembered that after the long fast of the night the reaction of the stomach will in all probability be alkaline, or, at any rate, neutral, and then, since it is claimed that the principal means of introduction of bacilli is in drinking-water, one should carefully avoid drinking water after a long fast, except some solid food be previously taken, and drinking water should especially be avoided before breakfast. As mentioned by Dr. Hay, it is a prevalent belief among the laity that one should not venture with an empty stomach in the neighborhood of infectious cases, and it would now appear as if this belief were about to receive some scientific support.

WINTER-TIRE.

IT is a curious fact that the farther north we travel the hotter habitually are the interiors of the houses. At first thought it would seem natural that the temperature in which the person lives in the house should approach more closely that of the external air, but a little consideration shows the reasonableness of the habitual action of northern nations. The man who is exposed all day to a low temperature must produce an enormous amount of caloric in order to meet the demand and keep his body warm. At eventide he naturally seeks rest, not only for wearied mind and muscle, but also for the heat-producing function. It is not always remembered that energy is expended in maintaining bodily temperature, and that when an excessive amount of such energy is required, excessive exhaustion follows. The habitual excessive draught of the winter-time upon heat production is probably one of the reasons that in the early spring every one feels so relaxed and depressed. Of course, the general relaxation and lack of energy which has received the popular name of spring-fever, and which is supposed by many to be moral rather than physical, is due in part to the fact that the winter is, at least to many brain-workers and denizens of cities, the period of excessive toil.

Nevertheless, it should be called winter-tire rather than spring-fever.

This relaxation of the system shows itself not only by the production of laziness, but also in manifestations of distinct disease. A good deal has been written in the course of the last decade concerning the fact that in children chorea is so much more frequent in the spring than at other times, but our own experience is that in this respect chorea does not stand alone among nervous diseases. Neurasthenic conditions, hysteria, and all the minor or functional nervous ills which are connected with lowered nerve tone have come under our notice as a regular spring crop, and we think most neurologists will find that the months of April and May are those of greatest professional activity.

PEPTONE SOUPS.

THE knowledge of the functions and chemical processes of the single digestive organs, as established within the last decade, has gradually led to the artificial reproduction in the laboratory of the digestive procedures, and to the preparation of the same digestion products as are formed in the economy. The intention not only to aid the weakened functions of the digestive apparatus, but also to procure a rest for the affected organ, and to protect it against mechanical irritation, gave birth in the first place to the preparation of a number of highly digestible articles of diet, and recently also to the practice of introducing into the alimentary canal artificially digested food-stuffs. Among these artificial digestion products the first rank is justly claimed for the artificially digested, peptonized albuminates, not only because they are indispensable for the support of the organism, but also because the assimilation of albuminates calls for the greatest activity of the alimentary organs.

There are at present very many artificially digested albuminates, so-called peptonized preparations, in the market. Unfortunately, nearly all have the disadvantage of a more or less unpleasant odor or taste, or, again, are of such a high price, that their prolonged use meets with serious objections on the part of the patients. The unpleasant odor and taste of these peptonized preparations in many cases originate from nothing less than a decomposition of the peptone, which substance is very hard to be preserved, or from prolonging the stage of digestion so far that numerous aro-

matic bye-products, such as cindal, make their appearance. Such a preparation, brought into the digestive apparatus, would of course only increase the existing trouble by intensifying the possibly already existing fermentation processes, and by inducing an elevation of animal temperature in consequence of absorbed decomposing matter. This may be especially the case with the enemata of pancreas peptones which are occasionally ordered in febrile affections. Leube-Rosenthal's meat solution, which is free from these objections, cannot be ranked with the peptonized preparations at all, on account of its scanty contents of peptone, but must be classed with the meat preparations. Dr. Jarvorski's peptone soup and a number of peptonized preparations, recently placed in the market by a reliable American firm, appear to unite all the advantages of peptonized articles, and to lack at the same time the above-mentioned objections. Jarvorski is favorably known to the readers of the GAZETTE by a number of valuable contributions to medical literature, especially by his essay on the effects of a Karlsbad cure. He claims to have used peptonized soup for the last six years, both in hospitals and in private practice, with the best results, without ever witnessing any undesirable after-effect, such as diarrhoea, which has been occasionally noted to follow the use of inferior preparations. This soup—intended for one day's ingestion—is prepared from 500 grammes (1 lb.) of the best beef, finely scraped, free from bone, fat, and sinew; to this is added 1 kilogramme (2 lbs.) of ordinary fresh meat. A quantitative chemical analysis of this soup* gives the following results: Syntonine, 7.3 grammes; propeptone, 33.0 grammes; peptone, 40.0 grammes. In all we have, therefore, 80.3 grammes of dissolved albuminous matter. The soup is, of course, to be warmed for each meal. It is claimed that a lost appetite can be recalled after a few days' use of this soup, and that previously existing gastric pains disappear equally soon. The soup may also be employed as an enema, and may then receive additional special medication.

The peptonized nutrition is indicated in all affections in which it is desirable to raise a weakened nutrition; there exists actually no contraindication for its use. The principal indications are diminished secretion of the digestive organs in febrile conditions, in

perityphlitis caused by inveterate intestinal catarrhs with accompanying catarrhal intestinal ulceration, in gastric catarrh, hæmatemesis, anæmia and chlorosis, intestinal stenosis, gastric ulcer, carcinoma, cardialgia without emesis, and finally in convalescence after febrile affections.

The peptonized articles experience a thorough assimilation, and by themselves form a sufficient nutrition for a long time, which is proven by the increase of bodily weight under their use. This important fact is vouched for by the researches of numerous observers, of whom we mention Plosz, Catillon, Raymond, and Adamkiewicz.

It is to be hoped that the peptonized soup and other reliable peptonized articles will soon gain the same and well-deserved popularity in this country which they enjoy abroad, especially in Germany.

OFFICIAL REPORT ON THE CHOLERA
EPIDEMIC IN FRANCE IN 1884.

THE general results and practical lessons to be drawn from the official report on the great epidemic of cholera ravaging in Southern France in 1884 cannot fail to elicit an earnest interest throughout the world. In the *Bulletin de l'Académie de Médecine* and the *Centralblatt für die Med. Wiss.*, of February 13, 1886, we find the report of Marey, based on the conclusion of the cholera commission, consisting of Pasteur and nine other prominent French physicians. One hundred and thirty-three interrogation blanks were sent to the various districts in which the epidemic reigned, one hundred and four of which, after their return, were regarded as useless for the purposes of the commission and discarded. It would lead too far to enter here into the details of the commissioners' work, and we shall content ourselves with representing the most vital conclusions arrived at, as follows:

1. In all those districts of France from which answers were obtained from resident physicians, the cholera appears to have been introduced into the single towns from previously infected places; for in three-fourths of all instances considered this mode of propagation was proven, while for the remaining one-fourth it was regarded as highly probable.

2. Considering only the observations as contained in the returned reports, the cholera is to be regarded as infecting more intensely the smaller towns than the more populous

* Abstracted from the *Zeitschrift für Analytische Chemie*, vol. xx. p. 316.

centres. It is consequently a serious mistake, during a threatening or actually existing epidemic, to flee from the larger towns to country-places.

3. General uncleanness, and the abominable habit of certain classes of people to throw around the human dejections everywhere, is the chief agent of the dissemination of the disease, for during an epidemic the dejections of a person who shows no other morbid symptom than a slight diarrhoea, may contain the causes (*les principes*) of a most serious cholera.

4. The cholera is often propagated by means of water contaminated with the excrements of cholera patients.

5. Stormy and rainy weather is often observed to either precede an outbreak of cholera or intensify its severity. This refers to the contamination of the drinking-water, caused by the dirt being first dissolved, and subsequently carried away into the various reservoirs of drinking-water.

6. And, as in the larger towns the drinking-water is better guarded and protected than in smaller places, the cholera finds a greater field of propagation in the latter. Some cities, however, which derive their water from brooks, lose the above advantage.

7. In every locality such quarters are most dangerous during an epidemic which lie on low grounds in the neighborhood of the water channels.

8. The disinfection of houses inhabited by infected persons, of excrement, of clothing, and of other suspected articles, is to be conducted strictly according to the instruction of the Comité Consultative d'Hygiène, and is as such an indispensable procedure. It appears as if by this measure the epidemic has been suppressed in its initiatory phase in several instances. But, in order to be thoroughly effective, this disinfection is to be executed with the greatest conscientiousness on the part of physicians, for the appearance of the first pronounced cases, even if belonging only to the light choleric affections, may propagate the disease by contamination of the water.

9. Old and weak people and small children are most predisposed to the cholera infection, though alcoholic indulgence, general and personal uncleanness, are likewise to be regarded as strongly predisposing agents.

10. One attack appears to confer no immunity upon a person, not even for a short time, as during an epidemic of a short duration several relapses were observed.

Reports on Therapeutic Progress.

ON NEW REMEDIES.

From the *Deutsche Medizinische Zeitung* of February 11, 1886, we abstract the following *résumé* of all such remedies as have been either recently discovered or presented to the profession in a novel form or combination. Though the majority of these drugs have been previously discussed in the *GAZETTE*, our readers will benefit from this condensed but comprehensive review, as prepared by MERCK, of Darmstadt.

1. *Absynthine*.—The bitter principle of artemisia absinthium, L. It is easily soluble in alcohol and chloroform, but sparingly so in ether, and almost insoluble in water.

This drug has been tried as a febrifuge, but without any definite results. Small doses stimulate, larger ones stupefy and produce emesis. Roux recommends absynthine in doses of $1\frac{1}{2}$ to 3 grains twice daily, quarter of an hour before meal-time, against anorexia and constipation of chlorotic persons and convalescents. The drug is contraindicated in looseness of the bowels. Gelatin capsules are the choicest form of its administration.

2. *Acid. Sclerotinic.*, Podrogsotsky. — A light brown powder, which can be well preserved in a dry place.

This new preparation is therapeutically far superior to the old drug prepared after the method of Dragendorff. It produces uterine contractions, and seems also possessed of general hæmostatic properties. Doses of $\frac{1}{2}$ grain applied hypodermically show a distinct effect, though for the majority of cases doses of $1\frac{1}{2}$ grains will be found necessary. The indications of the drug coincide with those of secale cornutum.

3. *Acid. Chromic. Puriss.*—The chromic acid prepared at present presents almost perfect crystals, is nearly free from sulphuric acid, and is consequently but little hygroscopic.

4. *Apiol Alb. Cryst.* (parsley-camphor = $C_{12}H_{14}O_4$) is contained in the seed of petroselinum sativum, together with aptine and an ethereal oil. It forms white needles of a faint parsley odor, is insoluble in water, but readily soluble in alcohol and ether.

Doses of $\frac{1}{2}$ to 1 dr. cause stupefaction. In doses of 3 grains it has been successfully employed against intermittent fever and dysmenorrhœa.

5. *Aseptol* ($C_6H_4.OH.SO_3.OH_2$).—Thirty-three and one-third per cent. solution of orthoxyphenol sulphonic acid,—a substitute for

phenol and salicylic acid, the antiseptic properties of which it represents. It is soluble in water, alcohol, and glycerin in every proportion. It lacks the irritating and toxic properties of carbolic acid.

Aseptol is recommended in extensive surgical operations, on account of its harmless nature. It does not destroy, like other antiseptic drugs, the finer tissues, and may consequently be advantageously employed in surgical ophthalmology. Aseptol is still active in a solution of 1 to 1000. Internally, the drug may be used in doses approximating those of salicylic acid.

6. *Atropin. Sulph. Alb. Neutr. Cryst.*—A preparation absolutely pure, neutral, and free from daturine.

Merck regards the prejudice against the German preparation in favor of the English drug as totally unfounded, and makes the rather bold statement that England does not furnish any atropine at all, and that the so-called English atropine, which many physicians exclusively call for, is invariably a German preparation.

7. *Baryum Boro-Wolframic., Baryum Oleinic., or Sulphur. Pur.*—All the preparations of baryta are to be classified among the poisons, and are hence to be used with caution.

Kobert informs us that in England the drug is used as a substitute for digitalis to regulate cardiac action.

In America the preparations of baryta are used against syphilis and scrofulosis, and especially the sulphate in doses of $1\frac{1}{2}$ grains, in the form of duodenal (keratine) pills.

In view of the rarity of poisoning with baryta it is difficult to fix the toxic dose of the drug. It is, however, known that the carbonate may kill adults in doses of 1 dr. As antidotes may be used apomorphine and the various soluble sulphates.

8. *Benzoylcegonin* ($C_9H_{14}NO_3 - C_7H_5O.$) is obtained as a secondary product in the preparation of cocaine; it is easily soluble in water, scantily so in alcohol, and insoluble in ether. The drug can be transformed into cocaine through methylation.

9. *Bismuth. Pepton. Sicc. Pulver.*—This preparation is thought to represent a rational form of administering the drug. It contains in 100 parts 3.1 parts of bismuth, or 3.5 parts of oxide of bismuth, in a soluble form. It is used against dyspepsia and gastralgia twice or three times daily in doses of 75 grains.

10. *Boldine.*—The preparation rapidly assumes a dark coloration when exposed to the light. It is obtained from an evergreen plant

of South America, and is said to be useful as a tonic in hepatic affections and biliary calculi. The alkaloid boldine is besides used as an hypnotic and in vesical catarrh. The drug is soluble in ether, alcohol, and in acidulated water.

11. *The Salts and Double Salts of Caffeine.*—Riegel, as is well known, has the merit of having first called attention to the virtues of the salts, and especially of the double salts, of caffeine. The caffeine preparations, especially when employed subcutaneously, exert a rapid and direct influence upon the heart, and are consequently particularly indicated when an immediate effect is called for. The absence of all accumulative action on the part of the drug enhances, of course, materially its value.

The principal indications for the caffeine salts are: valvular insufficiency in the stage of an impeded compensation, angina pectoris, and cardiac asthma. They have also been successfully tried against albuminuria and dropsy as sequelæ of heart-disease. After-effects were rarely noted. Lépine observed nervous excitement in the course of its administration, which, however, subsided after withdrawal of the drug. Quite recently, in some desperate cases, in which both caffeine and digitalis, given singly, had failed, their combination was found to be successful. Feilchenfeld, of Berlin, announced satisfactory results of the use of caffeine in the uræmia of scarlatina; 20 grains of caffeine-sodium salicyl. *pro die*, in connection with the other usual treatment, caused a rapid disappearance of albumen and also of vomiting.

The same observer noted in pleuritis, after the use of caffeine, an increasing diuresis and disappearance of the exudation. The following are the principal true salts of caffeine which have hitherto been prepared: the benzoate, hydrobromate, hydrochlorate, nitrate, salicylate, sulphate, and valerianate; of double salts are in the market the sodium benzoate (45.8 per cent. caffeine), sodium cinnamylate, sodium salicylate (62.5 per cent. caffeine), and sodium hydrobromate (52 per cent. caffeine). The citrate and tannate should also be mentioned. Riegel prescribes 12 grains of pure caffeine *pro die*, and increases the daily dose gradually up to 30 grains. The doses of the double salts can be easily deducted from those of the pure alkaloid.

12. *Calcium Hippuricum.*—A white powder, soluble in water. The action of this drug coincides with that of the corresponding sodium salt. Both drugs are employed in affections

depending upon an excess of uric acid in the body, and the dose is 10 grains.

Poulet claims that he has witnessed a rapid improvement from the use of the remedy in phosphaturia and cystitis, with a mucous and alkaline urine. The drug is further pronounced useful in scrofulosis, incipient cirrhosis of the liver, and struma. Poulet says its effects are miraculous in the uric acid diathesis.

13. *Calcium Santonicum*.—A white, tasteless powder, insoluble in water, possessing anthelmintic properties without being absorbed in the digestive tract. It is given in lozenges of 1 grain each.

14. *Cannabinon*.—A resinous body prepared from cannabis Indica. It is usually dispensed with sugar of milk (10 per cent.). Cannabinon is by no means identical with tetanine, the intoxicating principle of Indian hemp. To correct the taste of the drug, roasted coffee is used in a proportion of $1\frac{1}{2}$ grains of cannabinon to 15 grains of coffee. The drug is reputed to be an hypnotic, which, in doses of 1 to $1\frac{1}{2}$ grains, produces a tranquil sleep. While some observers emphasize its freedom from after-effects, Gnauck and Blumenthal observed vomiting, vertigo, and trembling after its use. Frommüller and Hiller recommend the tannate of cannabinon as a potent and yet mild hypnotic.

15. *Quinin. Peptonat.*, *Quinin. Phenyl.* (phenol quinine).

16. *The Salts of Cocaine—the Citrate, Hydrobromate, Hydrochlorate* (large crystals), *Oleate* (for external use), *Salicylate*, and *Tartrate*.—The mydriasis produced by cocaine is, according to Bradford, lessened by the addition of pilocarpine, in a proportion of 10 drops of a five per cent. pilocarpine solution to 1 f3 of a four per cent. cocaine solution.

17. *Cotoinum Verum* ($C_{20}H_{18}O_6$), *Cotoinum Parapurum* ($C_{19}H_{18}O_6$).—The former drug is but little soluble in cold water, but soluble in alcohol and chloroform. Internally, the remedy has been exhibited in 15-grain doses to adults and 1 to 2 grains to children, in powder or emulsion, subcutaneously in acetic ether (1 to 4); in existing pain, 30 to 60 grains of hydrate of chloral are to be added.

Cotoine is chiefly used against diarrhoea, and has been recently tried also in cholera. Para-cotoine is given in $1\frac{1}{2}$ -grain doses to adults and $\frac{3}{4}$ -grain doses to children. Albertoni asserts that the drug is insoluble in the gastric juice, and passes unaltered into the intestinal tract, where its absorption is effected. The drug, though unable to prevent decomposition, is certainly capable of retard-

ing this process. The same property belongs to para-cotoine, though to a less pronounced degree. Albertoni strongly recommends cotoine in the diarrhoea of lunatic, cachectic, and marasmic patients, and speaks also of its beneficial effects in the various dental affections of children and in the intestinal troubles of phthisical subjects. The combination of cotoine and the subnitrate of bismuth answers well to numerous indications. The drug is contraindicated in hyperæmia of the intestines and hemorrhage of the bowels.

18. *Colchicine*.—This drug, which is obtained from the alkaloid colchicine, is easily soluble in alcohol, chloroform, and boiling water. According to Hertel, colchicine is as poisonous as colchicine, its lethal dose being $1\frac{1}{2}$ grains for dogs and cats. Oberlin, however, regards colchicine as much more poisonous than colchicine. Rabbits died, according to this observer, after the ingestion of $\frac{1}{4}$ grain of colchicine in ten hours, and after 1 grain, within a couple of minutes, under complete paralysis. The drug affects principally the brain and spinal cord; opium and tannic acid act antidotal to it. In gout and acute articular rheumatism colchicine may be exhibited subcutaneously in doses of $\frac{1}{4}$ to $\frac{1}{2}$ grain.

19. *Fluid Extracts*.—These classes of medicine were first introduced in 1833 by the apothecary Boullay, of France, and in 1838 by Dehamel and Procter, of Philadelphia. The fluid extracts are justly credited with being easy to dose and to dispense, and with retaining their integrity to an eminent degree. They are gradually gaining popularity in Germany, thanks to the incessant endeavors of their American manufacturers.

20. *Extract. Berberidis Fluidum*.—An alterative and tonic remedy in certain skin-diseases, especially psoriasis. Its dose is 20 to 30 drops three to four times daily.

21. *Extractum Cascaræ Sagradæ Fluid.* (extr. rhamni Purshianæ).—Acts on the secretory system, and is recommendable in dyspepsia and habitual constipation, and also in dysentery. Its dose is 15 drops to 1 drachm. There exists also a dry hydrochloric extract of this drug. The following is a choice dispensation of the remedy in habitual constipation:

R Extr. cascar. sagrad. fl.,
Syr. cort. aur.,
Aqu. dest., \mathfrak{ss} f3ss. M.

S.—One teaspoonful three times daily.

22. *Extr. Euphorbiæ Pilulifera Fluid.*—Prepared from euphorb. pilulif., a native of

Queensland, and employed in asthma as a gentle stimulant and narcotic.

The active principle of the drug is soluble in diluted alcohol and water. On animals even small doses exert a toxic influence, and, if larger doses are given, respiratory and cardiac action are at first quickened, then slowed, and death ultimately ensues by paralysis of the centres of respiration and circulation. There is no accumulation tendency in the drug, and its elimination from the system takes place through the hepatic channels. The dose of the fluid extract is $\frac{1}{2}$ to 1 dr. twice daily. Dujardin-Beaumetz employs a tincture, of which 15 drops represent 75 grains of the plant. Its dose is 10 to 30 drops.

The drug is to be used cautiously on account of its unquestionable poisonous character.

23. *Extr. Euonymi Atropurpur. Fl.*—A purge and cholagogue.

24. *Extr. Hamamei. Fl.*—Prepared from the bark of hamamelis Virginica. A tonic and astringent. The drug enjoys a just reputation in all forms of hemorrhage, especially those of the lungs, uterus, and piles. Its dose is 1 to 2 f3 *pro die*.

Black used the remedy with excellent results externally, combined with equal parts of glycerin and some starch, in grave cases of bleeding hemorrhoids. The same physician recommends also its internal use in bronchial catarrh, hæmoptysis, and atonic and colliquative diarrhoea in doses of 1 fl. dr. every three hours.

25. *Hazeline.*—A product of distillation from the bark of hamamel. Virg. It resembles in its efficacy the tincture of arnica, and is employed externally, diluted with equal parts of water, against bleeding and catarrhal conditions of the eye. Internally, it is used in doses of $\frac{1}{2}$ dr. in water every four hours against profuse menstrual flows.

26. *Extr. Lippia Mexican. Fl.*—This drug is given as an expectorant in doses of $\frac{1}{2}$ to 1 dr. *pro die*. A camphor (lippiol) contained in lippia Mexicana, from which the extract is prepared, is its active principle. The remedy is utilized in acute catarrh of the respiratory passages and in the dyspnoea of emphysematous patients.

27. *Extr. Piscidia Fluid. vel Siccum.*—Powerful hypnotic drugs, the former being used in doses of $\frac{1}{2}$ to 2 dr., the latter in doses of 7 to 15 grains. The dry extract appears less reliable and not void of unpleasant secondary symptoms, such as vertigo. Frommüller em-

ployed pills, 1 grain each (2 to 4 *pro dosi*), prepared from the dry extract. The fluid extract possesses sedative properties in cough and dyspnoea.

28. *Extr. Rhois Arom. Fl.*—Recommended in affections of the bladder, urethra, and uterus, especially when depending upon excessive secretions, including hemorrhagic losses.

29. *Extr. Ustilagin. Maidis* (corn ergot, gramineæ).—Prepared from the parasite of zea mais (corn ergot).

This fluid extract, which is given in doses of 10 to 12 drops, is a substitute for secal. corn., and is said to be preferable to the latter in producing no pains, and in being relatively harmless.

30. *Extr. Viburni Fl.*—Prepared from viburnum prunifolium. According to American authoritative assertions a valuable tonic and sedative in threatening abortion, in dysmenorrhœa, and the discomforts subsequent to confinement. Its dose is $\frac{1}{2}$ to 1 fl. dr. four times daily.

31. *Helenine* (alant-camphor) ($C_6H_{10}O$).—Colorless, crystalline needles of a neutral reaction, which are almost insoluble in water, but easily soluble in hot alcohol, ether, and ethereal oils. Rorab believes that from its antiseptic virtues helenine may be utilized in tuberculosis, malaria, and catarrhal diarrhoea. One part of the drug, according to this observer, is able to protect 10,000 parts of urine against decomposition. Valenzuela obtained excellent results from this drug in pertussis and chronic bronchitis, and noted a diminution of the cough, dyspnoea, and pectoral pains to invariably follow upon its use. A narcotic effect was never observed. Besides, helenine produces a tonic effect upon the digestive functions, and may therefore be given even to phthisical patients affected with grave diarrhoeas.

32. *Homatropine* (Ladenburg, Merck).—A considerable reduction of its price is all the information obtainable regarding this drug.

33. *Hydrargyr. Tannic.*—Brown-greenish scales, forming a gray-green powder on being rubbed up; its proportion of mercury is at least forty per cent. The preparation is decomposed by concentrated acids and alkalies under separation of microscopically visible mercury-globules. Diluted muriatic acid does not materially affect this preparation. On the addition of water and acetic acid tannic acid is precipitated. The drug has an indisputable value as a mild antisiphilitic remedy.

The separation of mercury is so fine that a

quick absorption results in the intestines. This medication has consequently been aptly called "an internal inunction cure." The drug is given with four times its quantity of sugar of milk in $1\frac{1}{2}$ -grain doses four times daily in wafers.

In weak patients, and such as are predisposed to diarrhoea, Lustgarten prescribes the remedy in combination with tannic acid after the following formula :

R Hydr. tannic oxyd., $1\frac{1}{2}$ grains;
Acidi tannici, 1 gr.;
Pulv. gummosi or sacchar. lactis, aa 7 gr.;
Pulv. opii, $\frac{1}{2}$ gr. M.
S.—As one dose.

34. *Iodoform*.—This preparation (iodoform with gelatin) is intended for insertion into wounds, opened buboes, and fistules. Besides, it is used in gonorrhoea and other affections of the urethra, and also in the puerperal affection of the uterus.

35. *Kalium Osmicum* ($K_2O_5O_4 + 2H_2O$).—A violet-red powder, easily soluble in water. Its practical employment is somewhat marred by its hygroscopic tendencies, and many physicians prefer, hence, the salt to the acid. The indications of the acid coincide with those of the salt.

Both preparations enjoy a certain reputation in peripheral neuralgias, where, according to Neuber's recommendation, they are employed hypodermically. Mohr speaks highly of a one per cent. watery solution as a remedy of rheumatic ischias. Szumann and Eulenberg recommend parenchymatous injections of osmic acid against goitre, while Delbastaillé employed injections into sarcomata and lymphomata.

Quite recently the drug was proposed by Wildermuth as an excellent medication of epilepsy when combined with bromide of potassium. Wildermuth gives doses of $\frac{1}{2}$ to $\frac{1}{4}$ grain in pills with bolus alba. These pills are best coated, as they are apt to produce gastric disturbances when used for a long time.

36. *Keratin. Pepsino Paratum*.—This keratine is not affected by the acid contents of the stomach, as by the action of pepsine and muriatic acid it is freed from all substances which are soluble in the stomach; the preparation is only dissolved by the alkaline juice of the intestines. It is a gray powder, and has recently been warmly recommended by Dr. Unna, of Hamburg, as a suitable coating for all such pills the solution of which is desired exclusively in the intestines. Consequently, when prescribing arsenic, sugar of lead, ni-

trate of silver, phosphorus, and anthelmintic remedies in pill form, keratine can be used with great advantage.

37. *Liq. Ferri Peptonat*.

38. *Lithium Hippuric*.—This drug is employed in doses of 7 grains against affections depending upon an excess of uric acid.

39. *Naphthalinum Purissimum Alcohol. Depuratum*.—Being insoluble in water, alkalies, and acids, this drug can be brought into the system in relatively large quantities without experiencing any material absorption in the digestive tract. Rossbach claims to have the drug successfully exhibited in doses up to 75 grains in acute and chronic diseases of the intestines, in infantile diarrhoea, incipient typhoid fever, and tubercular intestinal affections. Priebram, Schwarz, and Ewald speak likewise well of the value of naphthaline, and agree that the drug possesses eminent antiseptic properties, and does not alter the principal systemic functions, such as circulation and respiration. The single dose is 15 grains, and 75 grains may be given *pro die*.

Externally, naphthaline is used combined with equal parts of vaseline against scabies, herpes tonsurans, favus, and eczema marginat. Oil of bergamot is, in a proportion of 1 part to 40 parts of naphthaline, an efficient means to disguise the taste of the latter.

Rossbach also uses naphthaline in the form of irrigations. Fifteen to seventy-five grains of the drug are melted in two to four fluid-ounces of water, mixed with twenty to forty fluidounces of hot water, and gradually cooled down.

Recently Wolf called attention in an American journal to the fact that naphthaline, dissolved in the proportion of one to five hundred in hot water, excelled alcohol as a preserving medium of anatomical preparations.

40. *Pelletierine* (punicin), the alkaloid of iort. punic. granat. ($C_{16}H_{37}O_2$) and *Isopelletierine*, are powerful anthelmintic drugs. There also exist a tannate, a sulphate, and a valerianate. The sulphate is a body of a thick fluid consistency, and in order to dispense it readily a ten per cent. solution is best kept ready, which is then dispensed in 1-drachm doses.

The tannate is a dry powder, and is given in 20-grain doses in water. The following combination of the sulphate and of tannic acid have been found especially effective :

R Pelletierin. sulph., gtt. viii;
Acid. tannici, gr. vii;
Aq. dest., fʒi. M.

S.—Take in one or two doses within half an hour; after that a laxative is to be taken.

Samples of *tænia serrata* which lived several days in water at a temperature of 98° (F.), with one per cent. of chloride of sodium and one-tenth per cent. of carbonate of sodium, grew lifeless within a couple of minutes after the addition of one one-hundredth per cent. of pelletierine. As the drug increases the arterial pressure, it is contraindicated by the existence of an aneurism.

41. *Pyridine Puriss.* (nitric crystal., sulphur. crystal.).—Pure pyridine was recommended against asthma originally by Germain Sée, of Paris. He orders about one drachm to be poured out on a plate, which is placed in a corner of the sick-room, and in this manner makes the patient inhale for about twenty to thirty minutes the pyridine vapors mixed with atmospheric air. A repetition two or three times of this procedure is said to be sufficient to relieve the dyspnœa.

The salts of pyridine serve for internal application.

Pyridine is, when exhibited as an inhalation, rapidly absorbed, and can be demonstrated in the urine a couple of minutes after its inhalation.

42. *Sanguis Tauri Pulv.* (ox-blood powder).—An odorless pale-brown powder, soluble in cold water, giving a blood-red color. The ox-blood powder is recommended as an artificial food for children in doses of 2 drachms, and for adults in doses of 6 drachms, three times daily in water, wine, milk, or black coffee, and is to be taken at meal-time.

43. *Serum Sublimat.* (one per cent. to ten cent.).—The union of mercury and of albumen is better borne by the system than the pure chloride of mercury. Lister recommends the employment of serum-sublimate for the saturation of surgical dressing material, such as gauze, cotton, and lint.

The one per cent. serum sublimate is a fluid, while the ten per cent. preparation has the form of thin plates.

44. *Terpinhydrat.* ($C_{10}H_{16} + 3H_2O$).—Colorless crystals of a faintly aromatic taste. Lépine advocates the use of this drug as a good expectorant in chronic and subacute bronchitis, and in chronic nephritis in place of the oil of turpentine. Its dose is 3 to 6 grains.

The high efficacy of turpentine in diphtheritis being indisputable,—Possel wrote as early as 1880 about this subject,—it is to be expected that terpine may likewise be useful in this affection. The hydrate of terpine is soluble in boiling water, in cold and boiling alcohol, chloroform, and ether, but sparingly soluble in turpentine.

45. *Urethan. Puriss.* ($NH_2CO_2C_2H_5$).—The ethylic ether of carbaminic acid: white crystals, easily soluble in water, odorless, but tasting somewhat like saltpetre.

V. Jacksch. found experimentally on animals that doses of $\frac{1}{2}$ gramme pro 1 kilogramme of bodily weight produced no toxic effects.

The drug evinced, as alleged, hypnotic virtues in very different affections, without in any way calling forth any secondary untoward symptoms, as is nearly the rule with all other hypnotics.

THE RADICAL CURE OF HYDROCELE BY ANTISEPTIC INCISION.

At the present time there may be said to be three methods prominently before the profession for the radical cure of hydrocele,—the time-honored injection of iodine, antiseptic incision, and suture of the tunica vaginalis and the scrotal skin (with drainage), proposed by Volkmann, and the more recent method of the injection of carbolic acid, suggested by Levis, of Philadelphia. An important modification of Volkmann's method has been adopted by Bergmann, of Berlin. It consists in the extirpation of all the tunica vaginalis save that covering the testicle. DR. WILLIAM T. BULL, in a paper read before the New York Surgical Society (*New York Med. Journ.*, March 13, 1886), states that he has performed the operation of antiseptic incision upon fourteen patients. One of these cases was operated on at the same time for the cure of a large hernia, and death followed from peritonitis, so this case may be therefore thrown out of consideration. The other thirteen patients all made satisfactory recoveries but one.

Of the twelve successful cases, ten were hydroceles of the tunica vaginalis, and two were hydroceles of the cord. The two latter had existed each for three or four years. The duration of the former was in six cases "about one year," in two cases between one and two years, in two others three years and over. As regards previous treatment, two had been injected with carbolic acid (one of them on two occasions), one with tincture of iodine, and the rest had been tapped or received no treatment. At the time of operation but one sac was observed to be decidedly thickened. This contained one or two calcareous patches, which were cut out. One hydrocele of the cord, as large as a horse-chestnut, was found to be made up of five or six cysts. This case car-

bolic acid had failed twice to cure. The other hydrocele of the cord was in reality a compound cyst of the head of the epididymis. A number of cysts of the size of a split pea were clustered about the epididymis, and contained within a larger cyst which reached up on the cord for an inch and a half.

In ten cases Volkmann's operation was done; in two (the cysts of the cord and epididymis) the entire parietal layer of the tunica vaginalis was excised. Bichloride of mercury of the strength of 1 to 5000 was used in moderation to irrigate the wounds, and extreme care taken to tie all bleeding points. The incisions were long enough to reach from the top of the sac to the bottom of the scrotum. The tunica vaginalis was united by a continuous catgut suture to the skin, and two or three deeper sutures were applied to hold the two halves of the sac in contact. A further effort was made in this direction by the application of the dressing in such a way as to hold the serous surfaces together. Bone tubes were used in three cases, rubber drains in nine. The latter were shown to be preferable. The bone tubes softened rapidly, but were not absorbed at all, and did not adapt themselves to the sinuosities of the wound. The dressing was uniformly of peat-bags (with bichloride) and bichloride gauze, with occasionally a strip of iodoform gauze over the line of suture, and an outer layer of absorbent cotton. There was no instance of excoriation or marked erythema of the skin. The penis protruded through the middle of the dressing, which was applied snugly with crinoline bandages. One or two patients had to be catheterized for twenty-four or forty-eight hours; but this was the only discomfort experienced. The career of the wounds was in all cases aseptic, and without fever. A temperature of 100.6° on the evening of the second to third day, without any acceleration of the pulse, was the greatest constitutional disturbance. With little variation, the first dressing remained in place till the seventh day. On its removal the tubes were withdrawn, and a lighter dressing of iodoform or boric-acid ointment and plain absorbent cotton was applied supported by a suspensory bandage. This was changed as often as it became soiled. The patients were allowed to move about a day or two later, but were not, with one or two exceptions, discharged till the sinuses were healed. As a rule, primary union was found on removing the first dressing. In six cases this was *complete* except where the drainage-tube emerged; in five,

besides the "drain sinus," there was a strip of granulations along a portion of the line of suture, forming a quite superficial ulcer, which scabbed over rapidly. In one case primary union was secured, but an accumulation of pus (without fever) made it necessary to break down the adhesion, and the abscess required two months to heal. The sinuses left after removal of the drain healed without special attention. There was no instance of orchitis, or epididymitis, or inguinal adenitis, and the induration and thickening along the cord, which have been noted by others, disappeared by the time the sinus closed, or soon after.

As regards the *time* occupied by the treatment, the shortest period of confinement to bed was seven days, the longest three weeks; the average stay in bed in all twelve cases was ten days. The shortest stay in hospital was ten days, the longest sixty days, the average twenty-seven days. Two cases were much slower in healing than the rest,—one from the occurrence of the abscess just referred to, the other from unexplained causes. Dr. Bull has had the opportunity of examining five of these patients one year after the operation, and they remain cured. Two have been seen six months, two others four months after operation, and are free from recurrence. All were operated upon under ether except one. In this case cocaine was used, with the effect of rendering the operation absolutely painless.

The result of the treatment of these thirteen patients may be briefly stated as follows: One has died from mercurial poisoning. Twelve have recovered,—ten after incision with suture, two after excision of the sac. The wounds, except in one case, have healed without pain or constitutional disturbance, and on an average in twenty-seven days, ten of which were spent in bed. Nine out of twelve patients are known to have had no recurrence at a period of from four to twelve months after the operation.

The possibility of recurrence is generally admitted, though alleged to be rare, and the cause is found in the failure of the two serous surfaces to unite fully after suture. Small cavities are left which become the seat of a reaccumulation. In order to obviate this, Von Bergmann has proposed the extirpation of the parietal layer, and carried it out in twenty cases, as mentioned above. The wounds healed without febrile movement on an average in ten to twelve days, and no recurrence has yet been seen.

The technique of the operation needs but slight mention. The incision should reach from the top of the sac to the bottom of the scrotum, and Dr. Bull prefers to place its lower end behind the testicle in order that the drainage-tube may be out of the way. The tunica is best removed by stretching it on the fingers and cutting through and pushing back the loose connective tissue with blunt scissors. It is much easier than the extirpation of a hernial sac where the presence of a truss has made the layers adherent. The membrane is removed close up to the epididymis and testicle. It is important to be very painstaking with the ligatures, and to have the drain long enough to pass beyond the testicle. In other respects one proceeds as in Volkmann's operation, but the suturing of the wound is simpler, as the tunica is absent.

ABDOMINAL SECTION FOR INTESTINAL OBSTRUCTION.

The subject of abdominal section for intestinal obstruction is attracting so much attention at present that we give in full the account read by MR. A. E. BARKER before the Clinical Society of London of a case of acute intestinal obstruction, followed by acute general peritonitis, in which abdominal section and release of the implicated bowel was performed, the peritoneum thoroughly sponged out, and in which rapid recovery took place (*Brit. Med. Journ.*, March 6, 1886).

The patient was a man, aged 23, who had enjoyed good health with the exception of flatulent dyspepsia, up to Saturday, November 14, 1885. At 7 P.M. on that day he had a loose motion, with a feeling of sickness, and three or four minutes later was seized with a violent pain in the abdomen, and fell down, rolling about in acute suffering. This pain commenced at a point midway between the umbilicus and right groin. At 7.30 he began to vomit, and continued to do so through the night and next day, until Monday evening, when Mr. Barker was sent for. At the onset, he was seen by Mr. Knaggs, of Camden Road, who gave large enemata, with opium internally, and hot fomentations over the abdomen. This treatment was continued with much judgment for the next forty-eight hours, but with no relief. On the contrary, the pain increased, and became general over the whole abdomen; the vomiting continued of a grass-green color, but never became stercoraceous; the belly grew more and more distended, and the centre of acute tenderness shifted to the left side

of the umbilicus. The peritoneum also began to fill with fluid; there was complete obstruction of the bowels from the first, and no flatus was passed. No distinct tumor was to be felt anywhere. When he was seen by Mr. Barker on Monday evening, the condition was very grave, and he at once decided to perform abdominal section, regarding the case as one probably of obstruction from a constricting band, or from volvulus of the small intestine. With strict antiseptic precautions, the abdomen was opened in the middle line, from the navel to the pelvis, and was found to contain much flaky serum and free gas; the intestines were coated with lymph, and moderately distended. The small intestine was now passed through the fingers from below upwards, until the middle third of the jejunum was reached. When this was drawn upon, there came a sudden rush of fluid through the portion held in the fingers, and the next moment there came out a loop of bowel deeply congested and ecchymosed, and distended to about three or four times its normal girth, and containing much fluid. Beyond this loop the gut was distended and moderately congested, but was sharply marked off against the implicated loop by the absence of ecchymoses. The bowel was now passed through the fingers downwards, to make sure that no other obstruction existed, and then the cæcum and vermiform appendix were turned out of the wound and examined with the same object; they were quite sound, though sharing in the inflammatory distention and congestion to a slight extent. The hand was now passed into the abdomen, and every part of it was explored, but nothing further was found. The gut having been carefully cleansed was now replaced, and the whole abdomen was mopped out with carbolyzed sponges, passed into every recess on long holders. The greatest accumulation of inflammatory products was found in the flanks and pelvis, and required repeated sponging. When the whole cavity had been cleaned, the wound was united with seven deep and two superficial carbolyzed silk sutures in the usual way, and was dusted with iodoform and dressed with salicylic wool, secured with a broad binder. The patient bore the operation well on the whole. He had a good deal of pain in the night, and vomited twice before morning. The vomited matter was no longer bilious, but consisted of watery altered blood. It came up for the last time at 9.30, twelve hours after operation. The patient progressed extremely well after this, the peritonitis disappearing rapidly. The

wound was dressed for the first time on the fifth day, and was then found united by first intention. Five of the stitches were taken out, and the wound was supported by broad strips of sticking-plaster applied directly to the skin with salicylic wool and a binder over all. On the seventh day, the remaining stitches were removed, and the wound was supported as before. On the eighth day, a motion was passed spontaneously, and again on the ninth. These motions were stained with old blood. On this day, owing to an error in diet, he vomited and burst open the upper two-thirds of the wound, in spite of the strapping, and a knuckle of the intestine protruded. On seeing this six hours later, Mr. Barker removed the dressings, cleansed the protruded gut under the spray, wiped out the abdomen and the wound, and replaced the gut. The opening was closed as before, and similarly dressed. The temperature in the rectum rose on the night following to 102° , but beyond this there were no disquieting symptoms throughout convalescence, the patient being able to take light solid food for a couple of days later. The wound healed in great part by first intention, but some of it by granulation. (Patient shown.) In reviewing this case, Mr. Barker dwelt upon the following points: 1, the nature of the obstruction; 2, the performance of abdominal section in the midst of acute general peritonitis; 3, the rapid disappearance of the latter after operation. He pointed out that, from a comparison of this with recorded cases, there could be no doubt that it was a case of volvulus of the jejunum, a very rare condition. The whole case corresponded closely with the few others on record, none of which had been operated on except one. The onset of general peritonitis he regarded as an extra reason for early operation in such cases, and showed that this view was supported by pathological reasoning and clinical experience. The rapid disappearance of the peritonitis, due to the release of the intestine and cleansing of the abdominal cavity, was then commented on; and it was pointed out that the good result was besides in great part to be attributed to the judicious treatment of the case from the first with opium and enemata, and the comparative rest that the bowels were then placed in up to the time of operation, which was not delayed a moment after it was evident that other means had failed. That such an operation could only be successful when performed early, and under the strictest antiseptic treatment, was also pointed out.

VARICELLA AND ITS DIAGNOSIS.

DR. HENRY ASHBY gives the following tabular contrast as to the points of diagnosis between varicella and varioloid (*Archiv. of Pediatrics*, February, 1886):

VARICELLA.	VARILOID, OR MODIFIED SMALLPOX.
<i>Incubation</i> .—Thirteen to sixteen days.	Twelve days.
<i>Premonitory Fever</i> .—A few hours.	Two to three days.
<i>Premonitory Symptoms</i> .—Mostly nil.	May include pain in back, headache, vomiting, delirium, drowsiness, convulsions, and fever.
<i>Rash</i> .—Red spots, in a few hours becoming vesicular, drying up in three or four days, leaving crusts; come out in crops on four or five successive days on scalp, body, limbs, face, and mucous membranes. Vesicles mostly monolocular.	Red, shot-like papules and soft palate, appearing first on face and wrists; during next twenty-four or forty-eight hours over body and limbs; papules become vesicular after two or three days, and pustules by eighth day of disease, or more frequently dry up, leaving scabs.
<i>Temperature</i> .—Intermittent in character.	Sudden rise, reaches height when the rash is fully out, followed by a speedy fall. Secondary fever slight in modified cases.

THE INFLAMMATION OF THE LIVER AND HEPATIC ABSCESS.

DR. GEORGE HARLEY has been publishing in the February numbers of the *Medical Press* a series of valuable papers on the causation, the diagnosis and treatment of hepatic abscess, and inflammation of the liver.

His ideas as to treatment are so novel, and seem to be so valuable, that we publish a tolerably full abstract of his methods, for the surgical procedures hitherto adopted in the treatment of diseases of the liver have been mainly confined to measures designed to promote the evacuation of abscess-cavities, or of cystic growths; but little has been attempted beyond this, inasmuch as the organ in question has been considered to lie beyond the line of direct operative interference, on grounds, it must be admitted, that appeal less convincingly now than in the days antecedent to modern surgical improvements. Dr. Harley, however, advocates so novel, and at first sight so startling, a modification of the usual treatment of hepatitis, that special attention is certain to be attracted to his utterances and experiences.

In a case of acute hepatic congestion, according to Dr. Harley, the first thing is to enjoin strict rest. The second is to put the patient on low diet. The third, to freely clear out the bowels. The fourth, to relieve the local discomfort by the application of hot, thick, and large linseed-poultices. The fifth, if there be signs of threatening supuration, to apply a freezing mixture of ice and salt, or leeches, or even cupping-glasses, over the painful hepatic region. It is sometimes surprising how speedy and complete is the relief afforded by this indirect mode of local depletion; but the striking novelty of Dr. Harley's paper is a much better mode of relieving an engorged liver, to which he has given the name of hepatic phlebotomy, from its being in reality a mode of bleeding the liver itself. Euonymin, iridin, leptandrin, podophyllin, and all other forms of hepatic purgative stimulants, are totally inadmissible in cases of hepatic congestion. Mercury is here our sheet-anchor, both as a purgative and an antiphlogistic.

When hepatitis, no matter what its variety may be, has once reached the congested indurated stage, Dr. Harley found much benefit from puncturing the capsule of Glisson.

So soon as the liver of a patient is not only enlarged, but hardened, in consequence of the pressure to which its inflamed tissues are subjected, as the result of their engorgement and confinement within their inelastic fibrous covering, there can be no more effectual way of giving relief than by puncturing the capsule of Glisson. Dr. Harley was led to adopt this plan of treatment from his experience of the benefits derived from puncturing the distended sheath of the sciatic nerve in cases of acute neuritis, which is done on precisely the same principles as the surgeon punctures the tense unyielding tunica albuginea to relieve pressure on the inflamed secreting structures of the testicle in cases of orchitis.

The operation of puncturing the capsule of Glisson is done with a trocar of the diameter of a No. 2 or 6 catheter, according to the gravity of the case, inserting the trocar in each lobe of the liver, and allowing it to remain for several minutes.

In support of the truth of these statements Dr. Harley reports the case of a man, aged 52, who came to him with a liver enlarged and indurated in all directions, in which this operation produced in eighteen hours the greatest relief and a general decrease in the size of the liver.

As regards direct bleeding from the liver, or hepatic phlebotomy, an indication which is generally acknowledged to exist, Dr. Harley shows that cupping or leeching the abdominal parietes can be of no avail; for since none of the hepatic blood-vessels communicate with those of the abdominal parietes, it is evident that it must be utterly impossible that the withdrawal of blood from the vessels in the abdominal parietes can have any direct effect upon the quantity of blood in the liver.

This is, however, according to Dr. Harley, capable of being accomplished with perfect safety by piercing the liver with a lung-trocar, from left to right, taking care only to avoid the large vessels which are in the neighborhood of the transverse fissure. The trocar should, therefore, be kept in a line between the centre and the upper convex border of the liver, in which position there are few large vessels, and there is, therefore, no risk of the entrance of air into the veins. Dr. Harley reports a case in which this plan was pursued with the greatest benefit.

In this connection the *Medical Press* for February 24 refers editorially to this operation as follows: "It is needful that the most careful and cautious consideration should be given to the subject in all its details ere an unqualified approval can be given to an operation, the risks and possible dangers of which have not yet been fully discussed. No good result can follow the hasty and general adoption of any surgical improvement to which recognition is accorded on first and apparently favorable results; and although in Dr. Harley's experienced hands, guided by a long and extensive acquaintance with liver-disease in all its varieties, the best consequences may safely be expected to follow the adoption of the course he recommends, it must still be remembered that only a few practitioners are possessed of the skill and knowledge requisite to enable them to form an accurate diagnosis and a sure judgment respecting the cases appropriate for treatment by an unfamiliar and important operation. We do not desire, or intend, to disclaim the advantages which Dr. Harley considers to be identified with his proposal; we only urge that it shall be fairly, fully, and conscientiously considered in every aspect before its adoption is made an article of faith among practitioners, and especially young practitioners. It promises to be a salutary proceeding according to the evidence adduced by its originator; and in the best interests of medicine and of suffering humanity it cannot be too surely grounded on such

proofs of efficacy as the skilled and experienced can alone assign to it in the earlier stages of its employment as a remedial procedure."

As regards the treatment of hepatic abscess Dr. Harley is, in general, in accord with the views held by the majority of the medical profession. He believes that the best plan for opening an hepatic abscess which has not pointed is with a trocar, either with or without the aid of the aspirator. Free incision with a knife, in his opinion, when the abscess has not pointed, but adds to the risk without yielding any proportionate advantage to the patient. In any case, after evacuation of the pus a drainage-tube ought to be inserted in the sac of the abscess, and the cavity well washed out with tepid antiseptic water. At the same time germicides, in the form of salicylic, carbolic, or mineral acids, along with quinine, should be given, and the general health of the patient carefully attended to, for even in the most favorable cases liver-abscess is invariably a most exhausting and dangerous affection.

As regards the diagnosis of hepatic abscess, Dr. Harley calls attention to the fact that it should not be forgotten that suppuration of the liver is always preceded by a longer or shorter period of hepatitis; the severity of the pain is, however, in no instance a criterion of its severity. For we may have great pain with slight inflammation, and scarcely any pain with a considerable suppuration. A superficial abscess is always more painful than a deep-seated one. If during the ordinary course of a hepatitis the patient should suddenly complain of chilliness or shivering,—when there is no reason to suspect occlusion of the bile-duct,—and the rigor is immediately followed by an increase of temperature and an aggravation of the constitutional disturbance, while at the same time the hepatic tenderness is increased, suppuration may be suspected to have set in.

There is always a disinclination to take food, and if the suppuration has existed for some time, there is frequently a well-marked diarrhoea, with or without blood. Vomiting also occasionally occurs, but it is not a common symptom. In some, though not in all, cases of liver-abscess, sneezing, coughing, and deep inspiration causes pain, and then the patient cannot lie comfortably on his side.

The most notable sign of liver-abscess, when there exists the before-mentioned hepatic symptom, is, in Dr. Harley's opinion, high temperature, varying from between 102° and 105°. The fever is often associated with

hectic and sweating exacerbations. The more superficial the abscess is, the easier is it diagnosed. When situated at the lower margin of the liver, where it projects from under the false ribs, the abscess appears as a smooth, hard swelling, with a feeling of more or less distinct fluctuation about it. On the other hand, when it is situated within the margin of the ribs, palpation furnishes no signs whatever of its existence. Even firm pressure causes no increase of pain beyond, perhaps, a feeling of a more diffused discomfort. Smart percussion, on the other hand, in general cannot be readily tolerated. When the abscess is large it causes bulging of the intercostal spaces, even before it actually points, and fluctuation may then be perceptible. But this is not often the case until it points, even when the abscess is below the ribs. To sum up, then, it may be said that all that we have to guide us in the diagnosis of the majority of liver-abscesses is the existence of pain in the liver, increased on pressure, associated with rigors and high temperature, and the other constitutional symptoms above mentioned. But as the combination of even all of these is not always conclusive, in cases of doubt it is true wisdom to have recourse to an exploring trocar.

The one Dr. Harley recommends to be employed in the general run of cases is a fine, six-inch long French instrument, but one eight inches long, the diameter of a No. 3 English catheter, may be used. There is, comparatively speaking, but little risk in the employment of either, if care be taken not to insert them too near the ribs, so as to avoid the danger of the instrument being either bent or broken by the ribs during a sudden and forcible act of inspiration, and keeping the point of the instrument from the vicinity of the larger blood-vessels in the neighborhood of the transverse fissure.

*INFLUENCE OF ANÆSTHESIA BY THE
INHALATIONS OF NITROUS OXIDE
UPON VARIOUS FUNCTIONS OF
THE ECONOMY.*

The researches of Drs. Jolyet and Blanche in 1873 demonstrated that anæsthesia, produced by the inhalations of pure nitrous oxide, is always accompanied by a state of asphyxia sufficient in itself to produce anæsthesia. DR. LAFONT (*La France Médicale*) thinks that this asphyxia concomitant on the anæsthesia produced by nitrous oxide may be a source of serious danger. In support of

this fact, he refers, first, to the production of death of the foetus and abortion at four and one-half months of pregnancy; second, the appearance of chlorosis in a young, growing girl; third, the appearance of epileptic symptoms in a young woman who had been exempt from them for many years; fourth, the appearance of albuminuria in a case of mitral insufficiency; and, fifth, diabetes mellitus, observed twice in the same patient, following each time the administration of nitrous oxide. This latter point Dr. Lafont has studied upon himself. He found, in the first place, that his urine was normal, that is, it was free from sugar, and he found that, two hours after two successive inhalations of nitrous oxide, after a few minutes' interval, his urine contained 1.65 parts of sugar per thousand. Six hours afterwards there were 18.40 parts per thousand, whilst three days afterwards the quantity had been reduced to 3.95 parts, and on the fourth all trace of sugar had disappeared. Dr. Lafont also found that in the dog glycosuria was produced after the inhalation of nitrous oxide. This condition of glycosuria was found to depend upon an actual increase of sugar in the blood, the amount found increasing from one and one-half parts per thousand, which is said to be normal, up to three parts per thousand.

In following up still further the action of nitrous oxide, Dr. Lafont found that the influence of this gas on the respiration varied with the animals experimented upon; that in man the respirations became more ample without changing their rhythm. In the rabbit, at the commencement of the inhalations, respiration becomes more frequent and fuller, but becoming slower at the moment that anaesthesia is complete. In the dog the respiratory movements gradually increase in frequency and fulness up to the moment of anaesthesia, at which time the movements are panting, and may become suddenly arrested, the stoppage being more or less prolonged, and sometimes proving fatal. As regards the influence of nitrous oxide on arterial pressure, Dr. Lafont found also a variation, according to the animal experimented on. On the rabbit the pressure remains stationary, or becomes slightly lower. In the dog it rises gradually up to the moment of anaesthesia, and then becomes stationary. At the commencement of the inhalations there is an increase in the frequency of the pulse in all animals. When anaesthesia is complete, the movements then become slower, and the heart may often be arrested. This slowing of the pulse may

persist even after recovery of consciousness. The increase of pressure observed in the dog Dr. Lafont found to be due to the condition of agitation of the animal, while the slowing of the pulse he attributes to stimulation of the pneumogastric nerve, since it is absent when atropine is given.

RESORCINE AND COCAINE IN WHOOPING-COUGH.

According to a note appearing in the *Centralblatt für die Medicinischen Wissenschaften* of February 13, 1886, DR. MONCORVO feels satisfied that resorcine is a valuable drug in the treatment of whooping-cough. Having used resorcine for a long time alone, and also—as is his habit at present—immediately after the application of a ten per cent. solution of muriate of cocaine to the larynx and pharynx, he found that the combined use of these drugs furnished better results than could be obtained from their application singly.

In this connection we recall that in the *Berliner Klinische Wochenschrift*, No. 44, 1885, DR. J. PRIOR, of the University of Bonn, eulogized cocaine as the remedy *par excellence* in pertussis, while, as our correspondent from Berlin assures us, the remedy has received an exhaustive trial at the Charité, and has been found to be almost wholly useless. In this controversy—Henoch *versus* Prior—we are probably safe in following the former as the best guide in the field of pædiatrics.

A CASE OF RECOVERY AFTER GASTRO-ENTEROSTOMY FOR CANCER OF THE PYLORUS AND STOMACH, WITH A NEW METHOD OF SUTURE.

Since first designed and performed by Woelfler in 1881, gastro-enterostomy has been undertaken at least twenty times abroad. In sixteen of these cases it was done on account of advanced carcinoma of the pylorus with ten deaths, and in four with non-malignant pyloric stenosis with one death. Most, if not all, of the sixteen were desperate cases for any operation. In the *Brit. Med. Journ.* for February 13, 1886, MR. ARTHUR E. BAKER reports the first successful instance in which this operation was performed in England, and he describes a new method of suture, which seems likely to offer advantages in the future.

The patient, aged 37, the mother of eight children, one of whom died of a malignant growth in the neck in infancy, began to suffer from severe gastric disturbance a year and a

half-ago. This consisted of great sickness and vomiting, with pain in her stomach. Since then hardly a day passed without retching; this was always worse after dinner, but was less in the evening, and when the patient was at rest.

On August 25, 1885, the patient noticed a lump, about the size of a walnut, in the epigastric region, and, at the same time, the vomiting and pain became much worse; the latter was aching and dragging in character. The tumor had grown larger since, especially within the last three months. When first noticed, the lump, the patient thought, was a little more to the left than now. It appeared irregularly nodulated from the first.

On admission into University College Hospital on December 19, 1885, the chief complaint was pain in her left side, and great weakness and loss of flesh (weight, seven stone three pounds). During the week preceding, her attacks of sickness had not been so severe; she had had only four or five. The vomit was watery and frothy, but never consisted of food, and never showed traces of blood; there had been much constipation for a long time.

State on Admission.—In the middle line of the body, about two inches above the umbilicus, was a hard, nodular swelling, about the size of an egg, very superficial, and very mobile. It shifted spontaneously from side to side during the day, and ascended a little, but did not descend below the point indicated. When in the middle line, it pulsated with the stroke of the aorta. It was tender on pressure, and caused most suffering when it lay towards the left side. There was no deficiency of resonance to be detected over it, and there was no gastric dilatation; the tumor moved with respiration; the abdominal organs appeared quite healthy.

On December 28 was made a careful examination of the abdomen under ether. The tumor could now be easily grasped through the thin parietes, and was found to be rugged in outline, about half the size of an orange. It showed the most remarkable mobility in all directions except downwards. It could be easily pushed under the last rib on the right side, and be there felt with the hand. It could be pushed almost into the same position on the left side, but with greater difficulty. It could not be made to descend. Nothing else abnormal was discoverable in the abdomen. After this examination, the patient was sick several times, but brought up no blood. The urine remained normal. From this examina-

tion, Mr. Baker strongly suspected cancer about the pylorus, though it was clear that there was much room for a difference of opinion as to the nature of the tumor, and he thought it might possibly turn out to be a floating kidney. One of his colleagues suspected a collection of biliary calculi in the gall-bladder. Every preparation was made for dealing with whatever kind of tumor should be found, and especially for excision of the pylorus, should it be necessary. The stomach was washed out twice on the day before operation, and again two hours before the latter, with warm water, introduced through a long flexible tube; and no food was given afterwards. With the most scrupulous care as to antisepsis, Mr. Baker operated on January 5, 1886, under the spray. An incision was made in the middle line, from just below the ensiform cartilage to the left side of the umbilicus. When the peritoneum was opened, the tumor presented at once to view. It was then easily diagnosed to be a mass of new growth, reaching from the anterior border of the pylorus about three inches to the left, and upwards towards the lesser curvature of the stomach. It was about the size of half an orange, flat externally underneath the serous covering of the stomach, and projecting into the narrow end of the latter. The posterior segment of the pylorus appeared sound to the touch. The tumor was perfectly non-adherent, but there were a few small hardened glands in the gastro-colic omentum. From the position of the growth and the presence of infiltrated glands, it was concluded that excision of the pylorus was contraindicated, and at once commenced the palliative operation of gastro-enterostomy, or the establishment of an artificial opening between the stomach and jejunum. After pushing the omentum, which was not voluminous, to the left, the first part of the jejunum was caught in the fingers, and a loop of it was drawn out of the incision. The middle of the anterior surface of the stomach was also drawn out, and was supported all round by warm carbolized sponges. Mr. Baker now passed a piece of the india-rubber tubing through the mesentery at each end of the loop of intestine; and, having emptied the portion of gut between by gentle pressure, drew the ends of the tubing tight enough to prevent access of the contents of the bowel into the loop to be operated on, and fixed each piece of tubing with a catch-forceps. The empty loop of gut was now laid upon the portion of the stomach to be

opened ; and a longitudinal fold of the latter, about an inch and a half from the great curvature, was pinched up between the finger and thumb of the left hand, together with the collapsed gut. An incision about an inch and a half long was now made in the fold of the stomach, and another corresponding in the approximated fold of the gut. These incisions only penetrated through the serous and muscular tunics, and left the mucous coat of both viscera intact for the present. Still holding the parts, as before, between finger and thumb, he now united the corresponding posterior edges of the wounds by a continuous suture, the needle entering and emerging in each case between mucous and muscular coats, and the threads crossing the cut edges of the muscular and serous coats. In this way, the serous surfaces were closely united from end to end before either viscus was opened. This row of stitches (which were about an eighth of an inch apart) was carried about a quarter of an inch beyond each end of the incision in the coats of the bowel. The moment had now come to open both the stomach and intestine completely ; and this was done with a stroke of a scissors through the mucous coat in each case, special sponges being ready to receive any fluid which might escape. A few drachms of *succus entericus* flowed from the bowel, little or nothing from the stomach-opening. After careful cleansing, the anterior borders of both openings were now united by a row of interrupted fine silk sutures, introduced according to Czerny's method. When this was completed, the two openings were securely closed ; but, as an extra precaution, the intestine was turned over, and the posterior suture was reinforced by a second row of interrupted sutures, placed about a quarter of an inch away from the first. The anterior row was then similarly reinforced by a row of continuous suture, taking up, as before, only the serous and muscular tunics. The elastic compressors were now removed from the gut. Lest there should be any "kinking" of the latter, as in one of Billroth's cases, Mr. Baker stitched its efferent portion to the stomach-wall, about three-quarters of an inch from the right extremity of the opening between the stomach and jejunum now established. The "toilet" of the peritoneum, replacement of the viscera, and closure of the external wound, completed the operation, which had lasted an hour and thirty-six minutes. The wound was dressed with salicylic wool. This mode of suturing the posterior edges of the opening

before the stomach is actually opened appears to be a new departure, and offers many advantages, which are obvious.

The patient bore the operation, on the whole, well, though towards the end the pulse became a little feeble. She was warm and comfortable when removed from the table. Peptonized enemata were ordered every six hours, and only ice by the mouth. There was no marked shock noticeable when she had recovered from the anæsthetic, but she complained of pain about the abdominal wound and to the left of it internally. She soon vomited some turbid fluid, and continued to do so for a couple of days, at intervals of four or five hours, bringing up from one to two ounces each time. This was not relieved much by hypodermic injections of morphine. As the vomiting went on, the fluid brought up became more and more turbid, and then became very fetid. It clearly contained matter regurgitated into the stomach from the jejunum, appearing most like pancreatic secretion very slightly stained with bile. The eructations, which were frequent, were also fetid. Thinking all this was due to simple gravitation of the contents of the jejunum through its dependent opening into the stomach, and as there were none of the signs of peritonitis, the patient was placed in the semi-recumbent position in bed on the third day ; at the same time, she was ordered one minim of creasote every hour in half an ounce of emulsion by the mouth. Whether as the result of the change of position, or of the use of creasote, the vomiting now ceased, and did not again return until the next morning, when she vomited for the last time.

The improvement was now uninterrupted ; the rectal temperature was usually below 100°. It is marked as 102° on the fourth day, but this is believed to be an error. Two hours later, it was 99.2°. On this day she was rather depressed, probably on account of menstruation having set in. The amount of brandy and beef-tea was doubled. On the fifth day she was given beef-tea by the mouth in ounce doses every hour, and on the sixth day an ounce of champagne every second hour and a tablespoonful of arrow-root. On the eleventh day she took some minced chicken, all of which was well digested. On the sixth day there were two natural stools, accompanied by a good deal of pain. On the thirteenth day Mr. Baker ordered half a drachm of confection of senna ; and on the fourteenth day she complained of a good deal of pain about the descending colon, which was relieved

by a high-reaching enema, which brought away a large quantity of fæces. Her general appearance began to improve after the first week, and the sunken look under the eyes to disappear. She also became cheerful, and expressed herself as very grateful for what had been done for her. She seemed so well on the seventeenth day after operation that she was allowed to sit up in a chair for half an hour, and enjoyed it greatly.

The stitches in the abdominal wall were all removed on the ninth day, and the wound was found to have united by first intention everywhere. It was still supported by broad strips of American rubber plaster in case of straining of any kind.

That the patient has been relieved by this operation, any one who has watched her can see plainly. That the greater rest secured to the diseased stomach by its new aperture of exit directly into the commencement of the jejunum may lead to a retardation in the development of the growth, there are some grounds for hoping. The food has not now to force itself past the cancerous and ever-narrowing pylorus, but can pass easily through the new opening, and so, perhaps, that ulceration of the surface of the growth, which leads to grave complications in many cases, may be staved off. As there is no interference here with the processes of digestion, the secretions of the liver and pancreas mixing as before with the food from the stomach, that slow process of starvation, accompanied by distention of the stomach and frequent vomiting, is prevented, which often renders these cases so painful and distressing to witness; the more so because, in many cases, the process is often very slow.

It is now more than a month since the operation, and still the patient continues well. She has suffered a little from constipation on one occasion, but has been relieved by enemata, and, to prevent this trouble recurring, is now taking small doses of laxatives. She sits up every day for some hours, after being confined to bed for more than five months. Her pulse is 78, her temperature normal, her bowels acting well, and altogether she is much improved and cheerful.

NOTES ON KAWA.

The highly interesting essay of L. LEWIN, the well-known Berlin pharmacologist, which was discussed in the February issue of the GAZETTE, has naturally aroused the curiosity of the profession to know more about this

powerful and hitherto practically unknown narcotic. In a recent meeting of the Berlin Medical Society, Lewin, being interviewed on the subject, communicated some novel data on this drug, which we abstract from the *Deutsche Medicinal Zeitung* of February 1, 1886.

The active principle of kawa contains no nitrogen. Lewin recently had an opportunity to test the effects of kawa on another physician, and was struck with their intensity and promptness. If six or seven division-marks of a Pravacz syringe are injected into the subcutaneous tissues of a man, sensibility becomes reduced to such an extent that a needle pushed into the subcutaneous tissues can be moved in every possible direction without meeting with a trace of sensibility. Later, Lewin undertook similar investigations on his own person, and found that in the entire neighborhood of the point of the injection, as far as the greenish resin could be seen shining through the tissues, sensation was utterly absent for five days. This anæsthesia was so complete during the mentioned period that local irritation elicited no response at all, and even strong induction-currents caused only a slight prickling sensation.

In conclusion of his remarks, Lewin stated that the drug may be of service, also, in another direction,—viz., as a means of disguising the taste of bitter or repulsive medicines; if the kawa-resin is applied to the tongue, and then quinine in substance or solution placed upon it, no trace of the bitter taste of the latter drug can be perceived.

THE ACTION OF CERTAIN DRUGS AND POISONS ON THE HEART OF THE FISH,

DR. T. WESLEY MILLS publishes in the *Canada Med. and Surg. Journ.*, March, 1886, an account of his investigations as to the action of various drugs on the heart of the fish. His experiments were made on the "toad-fish" (*batracus tau*). The drug was applied either in solution with a camel's-hair pencil, or simply dropped over the heart, the fish meanwhile being kept in a perfectly normal condition, bathing its gills in sea-water. That the effects witnessed were not due to indirect influence through the extrinsic nervous system of the fish was shown by isolating the heart, and treating it with the same drug or poison as the heart *in situ*. The results were always harmonious. The follow-

ing is a summary as to the conclusions to which his experiments led him:

Summary of the results of the action of Atropine and Pilocarpine.—1. Pilocarpine and atropine are antagonistic in action. The former is a cardiac depressor, tending to lower the excitability of the heart, render its action sluggish, and to stop it in diastole; the latter to improve a sluggish or weakened heart, and heighten the excitability of this organ under all circumstances. While pilocarpine tends to slow the rhythm, atropine quickens it, and increases the force of the beat. It manifests its action rapidly.

2. Atropine freely applied to the heart annihilates the possibility of arresting the heart reflexly.

Atropine applied to the conus arteriosus, arrested by a ligature between conus and ventricle, excites it to pulsation.

Summary of the results of the action of Sodium Carbonate and Potassium Carbonate.—Sod. carb. and pot. carb. are antagonistic in action on the fish's heart; the former quickens rhythm and diminishes diastolic relaxation, and heightens cardiac excitability, but is in this respect inferior to atropine. Potassium carbonate diminishes excitability, weakens the heart's action, and tends to arrest it in diastole. This agent seems to be a poison to the fish's heart.

Lactic Acid.—Lactic acid in five per cent. solution is a rapid poison, while in solution of one per cent. it depresses the heart, and gradually kills it in diastole.

Digitalin, in somewhat less than One Per Cent. Solution.—The action of digitalin may be stated thus:

1. Digitalin, when applied to a rapidly-beating heart, slows it.

2. Its invariable action, no matter what the condition of the heart, is to produce gradually increasing systolic contraction, the diastolic relaxation getting less and less till the heart is finally arrested in most pronounced systolic tetanus.

3. The peculiar action of the drug requires a short period before there is any decided manifestation of its effects; but when the latter do appear, they rapidly advance to a maximum.

4. It is not possible to stimulate a heart, brought to a stand-still by digitalin, to beat by mechanical means.

5. When the action is well pronounced, a large part of the time occupied in the systole of the ventricle is taken up in maintaining contraction when that is complete.

6. Digitalin neutralizes the action of various chemical agents, which, when applied to the heart, tend to cause undue diastolic relaxation (*e.g.*, pot. carb.).

7. A ventricle brought to a stand-still by digitalin is unusually small, hard, and pale ("tonic" contraction).

Nicotine in One Per Cent. Solution.—1. The first effect of nicotine has generally been arrest of the heart in diastole for a variable, but brief, interval; when actual arrest has not taken place, the beat has been much weakened and the rhythm slowed.

2. This condition is usually followed by irregularity and an increased rhythm, without much damage to the force of the beat.

3. The different parts of the heart may not act with their usual proportionate force or frequency. There may be two or more beats of the auricle for one of the ventricle, etc. (incoördination.)

4. The fish's heart shows a remarkable power to recover entirely from the effects of nicotine.

Veratrine in rather less than One Per Cent. Solution.—It is much more difficult to define the action of veratrine than that of digitalin, though the eye readily appreciates differences. In general, the beat has that sluggish appearance seen after pilocarpine is used, but in other respects veratrine is very unlike that drug in action. One of the most marked effects is the tendency to throw the parts of the heart, and even parts of the ventricle, out of harmony with each other,—*e.g.*, the central portion of the ventricle is sometimes seen to be more relaxed than the rest of it; the auricle often, after the action has lasted some time, gives several beats to one of the ventricle. It is also clear that the diastole takes place in a very sluggish way, quite unnatural to the fish's heart.

The effect on the diastole is certainly much greater than on the systole. In some phases of this action, at least, the systole is strengthened. In consequence of this effect on the diastole, the rhythm is slowed. We may put the salient points of its action thus:

The principal action of veratrine is on the diastole, which it renders more sluggish; the effect on the systole is slight, and possibly variable with the phase of action of the poison; as a consequence of its effect on the diastole, the rhythm is slowed. Want of harmony between the different parts of the heart and different fibres of the same part is liable to manifest itself.

Chloroform (undiluted).—Undiluted chloro-

form is a powerful cardiac depressor ; that its readiest effect is on the auricle proper ; that it can arrest the heart in diastole, but that this organ has considerable ability to recover from the effects of this agent.

Acetate of Strychnine in One Per Cent. Solution.—From a limited number of experiments with this poison, it appeared that it had the power to shorten the diastole and lengthen the systole, and slow the rhythm ; after arrest of the heart, it was still excitable by mechanical means.

It may be stated that in an area of the ventral wall of the ventricle, extending across it from the point of junction of the auricle, a behavior, under the use of drugs, is witnessed different from that of the rest of this part of the heart. Sometimes it seems more dilated ; at all events, it appears to be more susceptible to the influence of certain drugs and poisons (nicotine, chloroform, etc.) than the rest of the ventricle, but whether there is here difference in structure has not been determined. On hearts so sensitive as those found in the sharks and skates, drugs and poisons act with remarkable celerity.

URETHAN.

DR. A. S. MYRTLE writes to the *British Med. Journ.*, February 20, 1886, stating that since last October he has been using urethan in a variety of cases with satisfactory results.

He has used it in over fifty cases as a sedative and hypnotic, and his experience of its action encourages him to recommend the drug, believing that, in certain cases, it will prove of great value. The cases in which he prescribed it were of the usual run of everyday practice, where a sedative or hypnotic was required : general restlessness, sleeplessness, neuralgia, catarrh, certain forms of skin-affections with great irritation, also rheumatism and gout. Many of his patients had some peculiarity of constitution which prevented the use of opiates of the usual type ; and it is in this special class that he thinks urethan will prove of great value. One gentleman, who had suffered from insomnia for weeks, and who could not tolerate opium or chloral, took 15 grains at bedtime with the most perfect result. He wrote to Dr. Myrtle and said, "The sleep caused was most pleasant and refreshing. I awoke without a headache, with appetite for breakfast, and, what was equally agreeable, there was no interruption to any of my functions." Similar testi-

mony has been given by the majority of patients, who have taken full doses to produce sleep. In smaller doses, its action is less marked. Still, it is decidedly calmative and agreeable, causing no unpleasant effect, such as nausea, flatulence, constipation, or headache. It does not affect the nerve-centres of circulation or respiration, but spends itself on the cerebrum. It possesses, therefore, great advantages over the older and valuable sedatives, which have certain evil influences, especially in exceptional cases. Given in gout and rheumatism, in full doses, alone or in combination, it has the great advantage over morphine of not interfering with the action of the bowels or kidneys. Besides, it is not unpleasant to the taste. The only objection to it is its price, although that has been reduced fifty per cent. in the last three months.

THE TREATMENT OF STRANGULATED HERNIA BY IRRIGATIONS OF ETHER.

DR. BARTOSZ writes that for the last two years he has been applying with brilliant success irrigations of ether for the reduction of all cases of strangulated hernia which have come under his care. The irrigation is made after the method of Finkelstein (*Bull. Gén. de Mèd.*, December 15, 1886), which consists in pouring on the tumor every half-hour a tablespoonful of ether, and allowing it slowly to evaporate. The hernia under such treatment disappears spontaneously, or may be readily reduced in obstinate cases by gentle taxis. In the seventeen cases in which the author states that this method served to reduce the hernia, strangulation had persisted in some only a few hours, while in others it is stated to have lasted already for several days, before the cases were subjected to treatment. The author further refers to a case of intestinal occlusion in a woman 60 years of age, in whom absolute constipation had existed for nine days, incessant fecal vomiting and tympanites, thready pulse, etc., in whom, after a fruitless trial of all the known remedies, irrigation of ether on the entire abdominal surface in one and one-half hours caused a large evacuation of the bowels and the cure of the patient. This method of irrigation so employed by Bartosz may be replaced by driving the current of air from a bellows over the ether. Whatever, however, may be the means adopted, the ether acts by the refrigeration which its evaporation produces, and is therefore analogous to the application of ice, and

is consequently simply an improvement of the method whose value has long been recognized. We should think, however, that where the strangulation lasted for several days, as is stated by the author to have been the case in one of his instances of cure, even if the reduction of the strangulation should take place, there must be the greatest danger incurred in the return to the abdominal cavity of a knuckle of intestine which cannot but be gangrenous.

THE TREATMENT OF ACUTE INFANTILE BRONCHITIS.

At a recent meeting of the New York Academy of Medicine Dr. J. LEWIS SMITH read a paper with the above title (*Medical Record*, March 6, 1886). The subject was considered under two heads: (1) mild, and (2) severe bronchitis. He believed that simple bronchitis could be aborted, or rendered milder, by an emetic employed when the first symptoms appeared. For this purpose ipecac was probably the best. Measures designed to abort the disease, however, were not usually indicated when the patients were first seen; to be employed with success they must be adopted very early.

The treatment for mild, uncomplicated, primary bronchitis was very simple. A favorite mixture of the late Dr. Jackson, of Boston, consisted of equal parts of almond oil, syrup of squills, simple syrup, and mucilage of gum arabic. Of the mixtures in the Dispensary the *mistura glycyrrhizæ composita* was the best. The compound syrup of ipecac of the French Pharmacopœia was a most elegant mixture.

When the temperature was 102° F., and above, and the respiration correspondingly accelerated, he had been accustomed to use a mixture consisting of sweet spirits of nitre, syrup of ipecac, and syrup of balsam of tolu.

Severe Bronchitis.—When the inflammation involved the smaller bronchial tubes localized atelectasis was liable to occur, and also catarrhal pneumonia, which was one of the most dangerous diseases of infancy.

The indications for treatment in a severe case of bronchitis were to promote expectoration, to diminish inflammation, to strengthen the action of the heart, and prevent exhaustion.

In reference to cough there was safety in it, and he seldom added opium to any of his prescriptions which were designed to relieve cough. Although children did not expectorate, the bronchial tubes were as effectually

emptied when the sputum was swallowed. To facilitate expectoration two remedies had been used largely, namely, carbonate and muriate of ammonia; the latter was preferred in most cases, except in the advanced stages, when the former might be advantageous as a stimulant.

A favorite formula for the use of muriate of ammonia with him had been muriate of ammonia, one drachm; balsam of tolu, two ounces. When there was great dyspnoea and indications for clearing the bronchial tubes of mucus, this remedy should be administered every half-hour. Dr. Smith had not witnessed any marked benefit from the use of senega or squill. To get rid of large quantities of mucus an emetic was sometimes proper.

To sustain the Patient and reduce the Fever.—He had not noticed any marked reduction of the temperature by the use of quinine, but it seemed to him that it had been useful as a heart-tonic administered in small doses. For a child one year of age, half a grain to one grain. Antipyrine might be of service, but care should be exercised in its use. In a vigorous infant, suffering from bronchitis without or with only a very slight amount of pneumonia, it might be used. Digitalis as a heart-tonic was one of the best which could be employed. Alcoholic stimulation was necessary in severe cases; two or three drops of whiskey in water, for each year of age after three months, given hourly or every second hour.

External Treatment.—Leeching and vesication have been abandoned. Slight irritation of the surface affords relief, and for this purpose he had been accustomed to use a flaxseed-poultice, first rubbing the chest with camphorated oil in young children, and using a mixture of mustard and flaxseed, one to sixteen, in older children, enveloping the chest with the poultice and covering it with oil-silk. In those cases in which there was hurried respiration, accompanied by continued moaning, to cover the chest posteriorly and anteriorly with a poultice, and over the whole place an oil-silk jacket would afford marked relief.

In robust children the application of cold to the chest during the acute stage, as recommended by Hensch, of Berlin, might be of more service than poultices. For all infants under six months of age, however, poultices were preferable.

Change in position of the child he regarded as a most important element in the treatment,

laying the child first upon one side and then upon the other, and upon the back.

The chairman invited DR. A. JACOBI to open the discussion, who said that whenever Dr. Smith read a paper very little, if anything, remained to be said. There were some points which he would like to impress upon those present who had not seen a great amount of practice, and who would doubtless see more of these cases hereafter. One of the principal points to which allusion had been made, and of which he wished to speak, was the use of *opium* in these cases. We could not do well without opium in many of them, because there was so much irritation; but he would emphasize the necessity of giving as little as possible. If it was to be given at all, give a good-sized dose at night, for the purpose of securing a number of hours of sleep. He would express his conviction that in no small number of cases of capillary bronchitis and acute pneumonia in adults, the patients died in part of their disease, in part of the influence of opium. Certainly opium would suppress expectoration, and without expectoration bronchitis and pneumonia were almost invariably fatal.

There was one great expectorant which Dr. Smith had not mentioned, and that was *water*. Where was the expectoration to come from unless there was fluid in the body? It was all well enough to give muriate of ammonia and expect it to liquefy the expectoration; but the liquefaction could not take place without plenty of water, and the chief danger was that water was not supplied in sufficient quantities to young infants, older children being able to ask for it.

Another important point was the regulation of the temperature and moisture of the atmosphere in the room; this is especially important in all cases of so-called dry bronchitis.

With reference to the use of *digitalis*, he believed that two or three large doses in twenty-four hours were preferable to small doses frequently repeated. A child one year of age would take one grain of *digitalis* three times a day, for as many days as would be required, and the effect would be much better than if the remedy was used as it was usually employed.

Another exceedingly valuable expectorant was *camphor*, the effect of which was permanent, and it was more easily taken than carbonate of ammonia. A child one year of age might take one-quarter, one-half, or even one grain of camphor, rubbed up with glycerin

as often as every hour or every two hours, and in bad cases of bronchitis or pneumonia, where expectoration was wanted, he had not seen any expectorant which had served him a better purpose.

Turpentine, also, by inhalation, was an excellent expectorant. Put a tablespoonful or two tablespoonfuls of spirits of turpentine into the kettle of water which is kept in the room to moisten the atmosphere, and the air will be impregnated with the vapor of turpentine, which will greatly benefit the patient.

DR. JOHN C. PETERS was asked to continue the discussion, and said that one remedy, which was the best of all expectorants, and which allayed the cough, had not been mentioned, and that was potassium. The form in which he usually prescribed it was the liquor potassæ, one drachm to four ounces of water, and he very frequently used anise-seed water, which of itself was somewhat soothing. All of the alkalies, but more particularly potash, increased the ciliary movement of the bronchial epithelia, the only way in which expectoration was brought forward where it could be reached by cough. Besides, a solution of potassium would dissolve mucin, while simple water would not. He had almost abandoned the use of ipecac, except perhaps in small tonic doses. When there was great congestion and dyspnoea the administration of small doses of calomel, sufficiently large, however, to move the bowels, would relieve the heart and lungs, and render *digitalis* more active than it otherwise would be.

With reference to external treatment, he had used flannel chiefly, perhaps covering the chest with cotton. He thought that the frequent changing of poultices exposed the infant too much.

With reference to change of position, he had been in the habit of placing the child on the face, and had found it very beneficial.

He never used quinine as an antipyretic, but thought it beneficial in preventing the migration of leucocytes.

DR. JOSEPH E. WINTERS said that while, perhaps, acute bronchitis could not be aborted, the inflammation certainly could be minimized. During the time when the congestion was limited to the bronchial artery, remedies which reduced the force and frequency of the heart's action would reduce the inflammation, and for this purpose he employed veratrum viride, already mentioned by Dr. Ripley, or aconite; as a reliable article of veratrum viride was somewhat difficult to obtain, he frequently used the latter agent. This ex-

pectation, however, was realized only in cases of acute primary bronchitis.

After this his method of treatment was to use derivatives, and then mild cathartics, consisting chiefly of alkaline mixtures.

The second indication was to prevent accumulation of catarrhal secretion, as here occurred all the deaths. For the prevention of the accumulation of this secretion he used stimulating expectorants, and they varied according as to whether the expectoration was thin or viscid. In this condition cough also became remedial. During the catarrhal stage he combined camphor with other agents in a sufficiently concentrated form to excite a cough, which would, in part, be voluntary. Besides, he applied stimulating liniments to the surface of the chest, which would provoke deep inspiration. For this reason he thought that large poultices were dangerous, and that putting a pound of flaxseed, mixed with water, upon the chest of a child one year of age, would materially interfere with respiration. He preferred the oil-silk jacket, or, perhaps, spongiopylin, with cotton batting and oil-silk. The oil-silk was generally sufficient, with the use of a stimulating liniment, applied by putting the hand under the jacket, without exposing the chest of the child at all. He always insisted upon the following order in most of these cases: First, make the external application, then administer the expectorant, which would excite a cough, and then administer an emetic, and do all this at bedtime.

Opium became a dangerous remedy in young children, and he thought chloral did equally as well. When the secretion was watery and excessive, camphorated tincture of opium might diminish cough and secure rest, but it was not often indicated.

As to whether capillary bronchitis existed independently of broncho-pneumonia, he had his doubts, because when capillary bronchitis was found at autopsy it was associated with more or less of broncho-pneumonia.

DR. H. D. CHAPIN made special reference to the use of bromide of sodium, which he had used with good results. The use of opium had been pretty well condemned by the speakers by whom he had been preceded; and even in the doses recommended he had seen, it seemed to him, unfortunate results due to its use. In rachitic children he had noticed a more rapid and a more marked narcotic action produced by opium than in otherwise healthy children. In one case he felt quite certain that the brown mixture, regarded as perfectly safe in ordinary cases,

nearly caused the death of his patient. For some time, therefore, he had used the bromide of sodium, and although it did not act rapidly, yet, by giving it continuously, it produced a sedative effect, which had seemed to him to be safe and beneficial. He would be more afraid to use chloral than opium.

With reference to cases of mild bronchitis, he thought one of the best remedies was to put the child to bed at the outset, and when this was done the large majority of children would get well without special treatment.

DR. J. H. FRUITNIGHT spoke of the use of iodide of potassium in the second stage of the disease, especially when the secretion was viscid, administered in doses of one-fourth to two grains, according to the age of the child. He favored the use of oil of turpentine combined with balsam of fir.

ON PARTHENIUM HYSTEROPHORUS.

DR. ULRICI publishes a brief note on this plant, a native of Cuba, in the *Deutsche Medicinische Wochenschrift* of February 8, 1886, from which we abstract the salient points. The plant is in its home called escoba amarga, or confitilla, and has been in use with the natives as a febrifuge since time immemorial. It contains an alkaloid,—parthenine,—and, besides, four other alkaloids, and the non-crystallizable parthenic acid. Parthenine is crystallizable, and represents the active principle of the plant. One and a half grains of this alkaloid brought on the tongue in a watery solution produces a quickly-disappearing bitter taste and an increased salivation. One-fifth to one grain causes a sensation of warmth in the stomach and an increase of the digestive power. In doses of 3 grains the alkaloid quickens, and in 15-grain doses slows, cardiac action. The arterial pressure and respiratory frequency sink likewise after larger doses. The temperature of a healthy person is not affected by doses below 7 grains; 50 grains given in two doses cause a small reduction of temperature. The urinary secretion remains unaltered under the influence of the drug. Several trials with parthenine go to show that this alkaloid possesses some anti-neuralgic value.

THE TREATMENT OF PAINFUL FISSURE OF THE ANUS WITHOUT OPERATION.

The two plans of treatment generally recommended as the only reliable ones for the treatment of anal fissure are incision or

stretching of the sphincter muscle. As a rule, perhaps, stretching may be preferred, as it causes no external wound, and therefore does not render the patient liable to septic poisoning. MR. A. D. MACGREGOR (*Brit. Med. Journ.*, February 27, 1886) treats such fissures without any operative interference at all, and he claims that his success is such as to warrant a continuance of his method. His plan is first to order a full dose of castor oil with some rhubarb; when this has well operated the bowel is to be washed out with an enema of Condyl's fluid. After passing the speculum, the fissure is then to be painted with a solution of chloride of zinc, twenty grains to the ounce, and a piece of lint smeared with boric ointment, then introduced, the contraction of the sphincter serving to keep the lint in contact with the sore. The bowels are kept closed by opium, and liquid food only allowed. The subsequent treatment consists in the use of powdered boric acid half a drachm and violet powder one ounce, sprinkled freely on lint, and introduced into the anus to dry up any discharge. Mr. Macgregor states that one application of chloride of zinc in his experience has always proved sufficient, and only causes some smarting and uneasiness.

RESPIRATORY THERAPEUTICS.

There is an evident tendency, especially among continental physicians, to react against the system of endeavoring to treat affections of the respiratory organs exclusively by means of medicinal agents, which act on the system at large. It is beginning to be recognized that many, if not most, of these affections are local in their origin and in their course, until indeed the maintenance of life itself is menaced by the acquired incapacity of one important organ. The sooner this view of the pathology of lung-diseases is recognized, the better will it be for the comfort, if not for the cure, of the patient. We may even go a step further, and maintain that, even in lung-affections where the constitutional condition is not without importance, either in their etiology or in their course, much relief may be obtained and improvement effected by a judicious resort to the means which modern therapeutic research and ingenuity have placed at our command.

The truth of what we have advanced is already partially admitted by the profession and by the public, in the limited applications of

remedies in the form of vapors or sprays; but this method of treatment merits, and will doubtless obtain, a more thorough employment as a knowledge of its advantages becomes more general. Mechanical difficulties have long stood in the way of the more extensive adoption of the method of direct application to the irritated or inflamed mucous membrane of the respiratory tract; but this can now no longer be alleged as a sufficient reason for its non-employment. That it involves more trouble, and especially more direct supervision on the part of the medical attendant, is not to be denied; but that this increased trouble should be deemed an adequate objection to its administration, can scarcely be allowed. A recent contribution by Dr. Murrell on the subject of pure terebene as an inhalation, shows that the value of such applications is gradually becoming appreciated in this country.

The resources of this branch of therapeutics are more extensive than one is apt to imagine. Not only can constitutional effects be readily and promptly induced when desired, but drugs can be inhaled in the form of a vapor, or in solution as a spray, or in the solid form as an impalpable powder. By these means any desired effect can be produced, anodyne or expectorant, soothing or astringent, or antiseptic; all can readily be directed immediately on to the affected surface, and their beneficial results promptly and certainly obtained. Nor is this all. Thermic therapeutics have been resorted to ever since the days of Hippocrates as an adjunct to the more ordinary methods. By means of variations in the temperature of the inspired air, the characteristic effects frequently utilized in what we may call external medication may be made to exercise their influence here, and there can be no reason to doubt their efficacy in this case as elsewhere. Then, again, modifications in the composition of the inspired air may be and have been turned to account. The inhalation of a more highly oxygenated atmosphere, or of one more rich in that active form of oxygen, ozone, has during the present century been largely experimented with; and, even if the results have not come up to the somewhat extravagant hopes entertained when Priestley first discovered and promulgated the novel and curious qualities of this gas, enough has been observed and recorded of its influence to justify one in hoping for its further employment in the future.

The most modern addition to this department of therapeutics is perhaps the mechani-

cal treatment of certain affections of the respiratory tract by means of alterations in the pressure of the air. The various apparatus, designed with this object in view, comprise quite an arsenal, from the complicated inventions of Finkler and Koch to the simple accordeon-bellows of Fränkel. On a more elaborate plan, the pneumatic chambers are available, and have been in operation for some years with, it is alleged, eminently beneficial results in a restricted class of cases. We are all of us familiar with the advantages attending a change of air with certain patients and in certain maladies; and it cannot be doubted that much of the good so obtained is attributable partly to the change in atmospheric pressure, in combination with variations in the hygroscopic and electric properties of the respired air. What has been done of late has been with a view of conducting the treatment on a scientific basis, whereby, with careful observation, the credit due to the various factors of pressure, temperature, and composition can be more accurately determined, and long, expensive, and unnecessary voyages rendered to a large extent superfluous.

The methods of inspiring compressed air or expiring into compressed air have given especially good results in certain cases. The effect of the former is obviously to raise the tension of the air in the lungs, thereby facilitating and accelerating the interchange of gases. The expansion of the thorax is perceptibly increased even in a healthy subject; and, where the lung is bound down by false membrane, or is otherwise prevented from complete inflation, the increase in its vital capacity is as rapid as it is marked. Patients suffering from asthma, chronic bronchitis, bronchorrhœa, or emphysema, often experience great relief from even a single application. The increase of pressure need not and ought not to be very great. From one-sixtieth to one-thirtieth of an atmosphere is that most generally employed.

It is to be regretted that in this country no facilities exist for systematic treatment of this kind, beyond one or two special institutions; and in this respect we are much behind our continental brethren. In Germany and France the treatment is in full swing, and is said to be attended with much benefit in those cases where its employment is indicated. In a country like ours, where bronchial affections form a large and distressing proportion of our troubles, it is singularly inappropriate that fresh means and appliances for treat-

ment should be left comparatively untried.—*Brit. Med. Journ.*, March 6, 1886.

MANAGEMENT OF BREECH PRESENTATIONS.

At a recent meeting of the New York Academy of Medicine Dr. ROBERT A. MURRAY read a paper with the above title (*N. Y. Med. Journ.*, March 13, 1886), which dealt principally with the measures necessary to be taken to deliver in breech cases and to diminish the percentage of mortality. The importance of an effort in this direction was apparent from the fact that the statistics quoted from authorities gave a mortality in breech presentations of about one in eight and a half cases. Among the causes of this class of presentations were a contracted pelvis, an excessive amount of liquor amnii, violent movements, and a peculiar formation of the lower segment of the uterus. It was also remarkable what a large proportion of the cases occurred in premature labor and multiple pregnancy. The statistics of Simpson went to show how frequently, the child being dead, the loss of tonicity of the spine and the presence of flaccidity in the tissues caused malpresentations; those tables demonstrated that there was a constant tendency after the sixth month of pregnancy for the head to present.

In a case of breech presentation in which the mother's pelvis was of full size and regular form, and the child of moderate proportions, labor would probably be accomplished without particular difficulty, and the obstetrician had only to wait. If, however, the indications were that the labor would be difficult, if the pelvic cavity was not roomy, or the child of large proportions, version, if it was to be performed, should be done early, before the rupture of the bag of waters. If the case was allowed to progress, no obstruction being met with, the critical moment for the child would be just after the birth of the trunk and lower extremities, for now the cord was in danger of becoming compressed between the unyielding head and the pelvic wall. The cord should be pulled down and placed next the sacro-iliac synchondrosis by the side of the child's head, where it would be least likely to become compressed. The contractions of the uterus might be followed up by the hand, and flexion of the head might be aided by raising the trunk of the child. But in cases in which the limbs were extended upward over the front of the child, so that the toes were near the face, the breech was not nearly so large as the child's

head, and, being readily moulded, entered the pelvic cavity; the entire foetus then presented, as Barnes had well described, the form of a wedge with the base upward. Now, if traction was made by means of hooks, fillet, or forceps, and unsuccessfully, as it was likely to be, the apex would be dragged into the pelvis, and, the cavity becoming more tightly filled, compression of the cord would be increased, and the uterus rendered more irritable, and here the only measure for the safety of the mother and child was to bring down a foot. The use of the blunt hook to do this was difficult, as it was apt to slip and injure the soft parts or cause fracture of the thigh; consequently, if the child was living, it should not be resorted to. The fillet, if it could be guided over the limb, might cut the tissues or prove too weak to overcome the difficulty. The obstetric forceps had been recommended in these cases, but it was condemned by most authorities. It was only adapted for use on the head. The performance of cephalic version, as recommended by Spiegelberg, would be possible only before rupture of the bag of waters and before the breech became wedged.

The clear indication in such a case was to break up or decompose the obstructing wedge, which was to be done by bringing down one foot. The position of the breech in relation to the pelvis having been determined by ordinary diagnostic points, the hand was to be passed in front of the breech where the foot lay, and one foot seized by the instep and brought down; then the breech would probably soon descend. The cord would be better protected than if both feet were brought down. The foot nearest the pubes was most easily drawn down. If the case was not otherwise complicated, the labor would now go on naturally. If the breech filled the brim, or was forced into the pelvic cavity, little space would be left for the operator's hand, and under these circumstances the hand would have to be passed up to the fundus uteri in order to grasp the foot. That hand should be introduced whose palm would touch the abdomen of the child when introduced. When the foot was reached, preferably the anterior one, it was to be seized by the instep and drawn down out of the vulva. It was essential to get hold of the foot; taking hold of the knee, or hooking the thigh in the groin, would be of no use. During the operation the uterus should be supported by the other hand or by an assistant. If inertia uteri should now exist, we should still have at-

tained, by our hold on the foot, security for further progress of the case.

The operation of extraction by the breech might be divided into: 1. Drawing the trunk through the pelvis. 2. Liberation of the arms. 3. Extraction of the head. Traction on the leg should be carefully made, in drawing the trunk down, coincidently with the pains. The trunk should be drawn downward and backward in the axis of the brim, external pressure being made by an assistant, the traction being kept up until the breech was fairly in the pelvic cavity. After the extraction of the breech, the cord should be carefully looked after. Liberation of the arms might become necessary if the pelvis was at all contracted, or if traction upon the trunk had been too rapid, or had not been accompanied by external pressure on the uterus.

The head being at the brim, Smellie's method might be employed in the manner recommended by Schröder, or the method of Scanzoni. In all cases of breech presentation the forceps should be at hand ready for application to the head if it should be necessary. Particular care should be taken during its introduction not to lacerate the cervix. Passing a catheter up into the mouth of the child at this stage would frequently save life.

The subject of the management of breech presentations had been brought to the author's mind forcibly during the past year from the number of cases which he had seen in consultation, in nearly all of which he had found difficulty arising from flexion of the legs on the abdomen, diminishing the size of the breech to a certain extent, and at the same time forming a wedge that became more tightly impacted as the child descended. In all of these cases unsuccessful efforts had been made to extract before he was called, and he was impressed with the advantage of introducing the hand and bringing down the foot over other methods, such as the use of the forceps, the blunt hook, the fillet, etc.

*ARTIFICIAL ANÆSTHESIA WITHOUT
SLEEP AND RETENTION OF IN-
TELLIGENCE, MOTION, AND
SENSIBILITY.*

In the *Centralblatt für Chirurgie* of February 20, 1886, we find an interesting account by BROWN-SÉQUARD of a novel form of anæsthesia, which he has established by experiments on animals and on man. The author published some years ago a remarkable observation of his, viz., that by irritation of the

laryngeal mucous membrane he could eliminate to a more or less degree all sensation of pain from all parts of the body. This remarkable effect is brought about by an inhibition exerted by the superior laryngeal nerves upon the nerve-centres, and can be limited almost exactly to one-half of the body. Since that time Brown-Séquard instituted numerous experiments on man and animals. In nine monkeys and forty-three dogs the experimenter could produce analgesia without sleep, after the opening of the trachea, by means of carbolic acid, chloroform, or sub-respiratory intramucous injections of cocaine. Especially striking was the effect of an irritation of the mucous membrane of the larynx and neighboring parts, such as the trachea and pneumogastric nerve above the branching off of the superior laryngeal nerve. Other modes of producing an irritation on the mentioned region were also tried, but proved less efficient. Among these the author mentions the following: galvanization of the superior laryngeal nerve or of the larynx, cauterization of the laryngeal mucous membrane by nitrate of silver, hydrate of chloral or other caustics, kneading of the larynx, introduction of a catheter into the laryngeal channel, and division of the trachea or of the integument of the neck in front and on the sides. After the cutting of the integument of the neck the experimenter did not, as a rule, observe general anæsthesia, but noted the same to radiate from the wound over the entire neck down to the ends of the shoulder-blades. This fact suggested to Brown-Séquard the possibility of successfully combating the epileptiform affections of various animals originating in this zone.

The wounds themselves remain insensible up to the time of cicatrization, and in the animals experimented upon, large nerve-trunks can be cut and deep cauterization or galvanization be performed without eliciting any expression of pain. Still, in the majority of cases the analgesia produced in the stated manner extended only over the superficial parts of the body, though its duration was generally from fifteen to twenty hours. The sense of touch and the muscular power remained likewise intact.

It is clear that this method of causing anæsthesia can find but a limited and imperfect application in man. Brown-Séquard indeed made some very interesting experiments in this field which may possibly, at some future time, lead to more definite and available results. He exposed the person to be experimented

upon for two-thirds or three-fourths of an inspiration to pure air and for the remaining one-third or one-fourth to carbonic acid gas, which, however, was, at once again expired. Neither this gas nor chloroform should enter the lungs, lest the analgesic influence of the superior laryngeal nerves upon the nerve-centres be removed. These inhalations had to be continued in man for twenty minutes in order to obtain the three peculiarities of this kind of narcosis, viz.: 1, A complete analgesia of the skin, lasting for forty hours; 2, a cessation of various kinds of pains for the period of two days; 3, a perfect absence of the sensation of fatigue.

Brown-Séquard concludes that it is possible by an irritation of the laryngeal mucous membrane in man and animals to decrease or even abolish the sensation of pain without interference with the intelligence, the senses, and the voluntary movement.

THE RELATIONSHIP OF THE FORMATION OF UREA AND URIC ACID TO THE SECRETION OF BILE.

DR. D. NOEL PATON publishes in the *Brit. Med. Journ.* for March 6, 1886, the following summary of an elaborate series of experiments which he made in the physiological laboratory of the University of Edinburgh in order to determine the relationship as to the formation of urea and of uric acid to the secretion of bile.

1. *Salicylate of Sodium*.—(A) *In man*. In dose of 0.106 gramme per kilogramme, salicylate of sodium causes no change in the amount of water passed, a slight increase in the urea, and a very marked diminution in the uric acid excreted. This last change is by far the most manifest; in one experiment the diminution was as great as 64 per cent. (B) *In dogs*. In doses of from 0.45 gramme to 0.6 gramme per kilogramme, salicylate of sodium caused a marked diminution in the water passed, a rise in the urea, and a great diminution in the uric acid excreted.

2. *Benzoate of Sodium*, in doses of from 0.51 to 0.58 gramme per kilogramme, causes little or no change in the amount of water. The urea is greatly increased, and the uric acid is diminished, though not so markedly as with salicylate of sodium.

3. *Colchicum*, in doses of 0.02 to 0.037 gramme per kilogramme of the acetic extract (*B.P.*), causes a very marked increase in the urea and uric acid. When the doses are

small, the water is also increased ; but, with large doses, the water secreted may actually fall, while neither the urea nor the uric acid are so markedly increased as with smaller doses.

4. *Perchloride of Mercury*, in doses of from 0.0015 to 0.0075 gramme per kilogramme, causes an increase in the excretion of water, urea, and uric acid.

5. *Euonymin*, in doses of from 0.04 to 0.10 gramme per kilogramme, causes a slight increase in the water excreted, a very marked increase in the urea and uric acid. In larger doses, 0.16 gramme per kilogramme, it causes purging, with no diminution in the water passed by the kidneys, but without the marked rise in the urea excreted.

It is thus seen that, in dogs in a condition of nitrogenous balance, stimulation of the flow of bile by means of these drugs is accompanied by an increased production of urea. That an increased production, and not merely an increased excretion of urea, occurs, is clearly shown by the fact that, after the administration of the drug was stopped, the amount of urea merely returned to the normal, and did not manifest a fall corresponding to the initial rise.

Dr. Paton therefore concludes that the formation of urea in the liver bears a very direct relationship to the secretion of bile by that organ. On the nature of this relationship he has not touched in the present paper ; but at an early date he hopes to give the results of a series of experiments upon this subject.

To the physician, the results of these observations must have considerable interest, especially of those which, dealing with the influence of salicylates and benzoates upon the excretion of uric acid, afford a key to their mode of action in gout. No less interesting is the demonstration of the fact that colchicum increases, and does not diminish, the production of uric acid.

SALICYLATE OF SODIUM IN IRITIS.

At the meeting of the Baltimore Academy of Medicine, held February 16, 1886, DR. SAMUEL THEOBALD (*Maryland Med. Journ.*, March 6, 1886) referred to some interesting results he had recently obtained by the use of salicylate of sodium in iritis, occurring in patients with a history of inflammatory rheumatism.

Three weeks ago a young lady had called to see him. She had a most intense plastic iritis, pupil perfectly immovable. She had

only perception of light, and could not count fingers at the ordinary distance. She was ordered sodium salicylate, and in a few days she obtained much relief. This salt was then withdrawn and iodide of iron ordered. She did well until the end of several days, when she reappeared, complaining of the same trouble, which increased in intensity until, at the end of two days, she was in the same condition as originally. The salicylate was repeated, as well as the atropine drops locally, and mercurial inunctions to temples. Cathartics were ordered, and in *two days* she was so very much improved that vision equalled $\frac{3}{4}$, and the media sufficiently clear to permit satisfactory inspection of the optic disk.

She had had some glaucomatous tension, but this did not prevent his ordering atropine, nor interfere with the physiological and therapeutical action of the drug.

A NEW METHOD FOR ANÆSTHETIZING THE UNINJURED SKIN WITH COCAINE.

DR. WAGNER, at the meeting of the Society of Physicians at Vienna, held February 5, 1886, described a method by which the uninjured epidermis might be rendered anæsthetic through the application of cocaine. For this purpose he made use of the property of a galvanic current discovered by Dr. Haertner, in consequence of which fluids move from the positive to the negative pole. If the positive electrode is dipped in a cocaine solution, and placed upon the skin, and the negative pole placed a short distance from it, and a current allowed to pass, the skin lying between these two points of application of the electrode becomes anæsthetic. Wagner made a number of experiments to determine the value of this method to surgical practice in the clinic of Prof. Billroth, and found that by the means of this such anæsthesia as would prevent the appreciation of incisions of the skin was readily attainable.—*Wien. Med. Blatt.*, February 11, 1886.

THE RADICAL CURE OF HYDROCELE.

At a recent meeting of the Academy of Medicine in Ireland, MR. MCARDLE read a paper on the radical cure of hydrocele. After describing the methods of Volkmann, Julliard, and Bergmann, he read the notes of three cases illustrating the method of incision (*Medical Press*, March 10, 1886). He brought forward specimens to show the ease with which the tunica vaginalis could be removed in the

operation for excision. He then compared the methods of injection and dissection chiefly as regards—1st, the relative difficulties of the operative procedures; 2d, the dangers attending each; 3d, the length of time required for cure; and, 4th, the chances of return after each method. In reference to the third point he called attention to the following as the dates of healing. After

Injection.	Incision.	Excision.
Billroth.....9th	Volkman. 8th-10th	Julliard..... 10th
Stolz.....10th	Küster..... 14th	Bergmann., 11-12th
Weiss.....8-9th	Lister..... 17th	

The chances of recurrence in various methods he stated as follows:

Cases.	Injection.	Recurrences.
315		41
238	Incision.	5
72	Excision.	0

The percentage of recurrences after injection of different substances seemed to be very much the same. After iodine, fifteen per cent.; chloral hydrate, thirteen per cent.; perchloride of iron, eleven per cent.; carbolic acid, ten per cent.; and chloroform, ten per cent. Mr. McArdle recommended the dissection method in—1st, multilocular hydrocele; 2d, hydrocele connected with tubercular testis; 3d, cases complicated by mucoid transformation of the cellular tissue of the scrotum; 4th, cases where injection of ordinary hydrocele failed more than once; and, 5th, those cases of hydrocele in which the tunica vaginalis becomes greatly thickened, coated with chalky deposit, or filled with foreign bodies.

In the discussion which followed, MR. STOKES said he could not, in his own practice, recall a single instance of failure in the radical cure of hydrocele by what Mr. McArdle termed the old method of injection, although, however, some of his cases had been injected more than once. In none of the cases was there any serious trouble, such as fever, sloughing of the scrotum, erysipelas, etc., therefore he was not supposed to alter his method of treatment for one more hazardous. He had seen Volkmann's treatment by incision, and one of the most important points connected with it had not been mentioned,—namely, that, having incised the tunica vaginalis, and attached the edges with great accuracy to the edges of the skin by continuous sutures, a series of deep sutures were applied to keep the surfaces in apposition. He had seen serious consequences follow the operation,—for instance,

retention of urine and fever. Another objection was the difficulty of keeping on antiseptic dressings, and there was also that of preventing the sutures ulcerating through the tissues of the scrotum. While there were all these difficulties and dangers attending the treatment proposed, it was obvious that the old and simple method of using some of the preparations of iodine was the one that in the majority of cases was to be preferred.

MR. BARTON said the question was one of choice between the operations which admittedly had certain risks and the well-established procedure which was without any serious risk. He was therefore gratified that Mr. McArdle had recommended those operations for the treatment of hydrocele only in difficult cases which had resisted injection. That limited materially the scope of the recommendation. His own experience was, like Mr. Stokes's, that he could not recollect a single case in which the injection plan had failed to produce a cure, nor one in which it had produced dangerous symptoms. There was occasionally delay experienced, but ultimately, with care, those cases were also successful. Therefore he did not see any necessity for the operations recommended. He could, however, imagine complicated cases in which some other means than injection must be tried; but such cases were very few, having regard to the fact that surgeons of experience had not met any. On the other hand, the treatment of injection by iodine was the outcome of many years' surgical experience.

THE TREATMENT OF CERTAIN FORMS OF TYPHOID FEVER BY INJECTION OF ERGOTIN.

DR. EMILE DE MANGE has recently published a paper on a mode of treatment which he claims renders great service in the treatment of certain forms of typhoid fever (*Journ. de Méd.*, January, 1886). Often, when a typhoid fever patient has reached the end of the second week, the temperature will oscillate around 40° C., with scarcely any morning remission, pronounced ataxia will be present with delirium and agitation. The pulse, above 120°, becomes small, compressible, and weak; the movements of the heart are quick and weak, and the heart-sounds, especially the first, are feeble; pulmonary hypostasis is marked; the extremities become cyanosed, livid, and cold; irregularity of the pulse becomes more and more marked, and syncope and impending death is evident. In such a case De Mange

first employed the subcutaneous injection of 15 grains of ergotin. Ten minutes later the pulse, which was thready and scarcely perceptible, had increased considerably in strength and volume. A second injection was made six hours later, and again during the night following, when it appeared that the pulse was a second time becoming feeble. From this moment convalescence set in, and, although complicated by an intercurrent pleurisy, terminated in a complete cure. De Mange explains the influence of ergotin in such a case by claiming that the symptoms on the side of the vascular apparatus are due to some disturbed cardiac and vascular innervation, and therefore ergot, by increasing the arterial tension, is indicated. He, therefore, thinks that ergotin should be administered in what he terms the cardiac form of typhoid fever, or, in other words, cases characterized by excessive acceleration of the pulse and weakening of the arterial tension.

**A CASE OF THORACIC ANEURISM TREATED
BY THE INTRODUCTION OF STEEL
WIRE INTO THE SAC.**

At the meeting of the Royal Medical and Chirurgical Society held February 23, 1886, DR. W. CAYLEY (*Brit. Med. Journ.*, February 27, 1886) read an account of a man who was admitted into the Middlesex Hospital who had suffered from symptoms of a thoracic aneurism since November, 1884, but it was not until five days before his admission that a pulsating tumor made its appearance at the root of the neck, rising about three inches into the neck behind the right sterno-clavicular articulation.

The patient was at first treated according to Tufnell's method, and given large doses of iodide of potassium. The tumor continued to increase in size, and it was evident that it must either soon burst externally or extravasate among the tissues of the neck. On June 24, Mr. Hulke introduced into the sac, through a fine canula, forty feet of steel wire. This caused no constitutional disturbance or local pain, and this portion of the aneurism became completely consolidated. Towards the middle of August, signs of the extension of the intra-thoracic portion of the aneurism—increasing dyspnoea and severe paroxysmal cough—became more marked, and there was an increase of pulsation behind the sternum and towards the left sterno-clavicular articulation. As it was evident that the aneurism must soon prove fatal from pressure on the trachea, it was de-

termined to endeavor to consolidate the part of the sac producing this pressure. Accordingly, on September 10, Mr. Gould, in the absence of Mr. Hulke, introduced a canula just above the left sterno-clavicular articulation, directing the instrument obliquely towards the middle line, and introduced thirty-four feet nine inches of wire. No constitutional disturbance followed, but no relief was given to the symptoms, and the patient died in a paroxysm of dyspnoea on September 19. On post-mortem examination, a large aneurism was found springing from the ascending part of the arch, and communicating with the vessel by a very large orifice; the whole of the upper portion was completely filled by a clot, embedded in which was the wire. The wall of the aneurismal sac, where it projected into the neck, consisted only of a little condensed connective tissue. The lower portion of the sac, near its origin from the aorta, caused compression and flattening of the trachea just above its bifurcation. The first operation produced the desired result in preventing the imminent rupture of the aneurism. The size and connections of the sac rendered the second operation ineffectual.

**THE "DRY TREATMENT" FOR UTERINE
DISORDERS.**

In a paper read before the St. Louis Obstetrical and Gynæcological Society, DR. GEORGE J. ENGELMANN brings forward what he terms a new departure in uterine therapeutics. Preliminary to a description of his own methods, Dr. Engelmann gives an interesting sketch, showing the national peculiarities of gynæcologists, so far as topical therapeutics is concerned. "In Germany," he says, for instance, "at one time the washing of cervix and vagina with strong solutions was an almost universal practice; in many clinics it was customary, whether other treatment was applied or not, to wash cervix and vagina with strong solutions of sulphate of copper, or carbolic acid, through the Ferguson speculum. In France—I am only speaking of methods which are not used here—they use the cautery, and medicated supports to the uterus; the thermocautery also is a specialty in French gynæcology; a common usage is to apply a remedy in a small semicircular bag made of muslin or mosquito-bar, which at the same time serves as a support for the uterus. This country is peculiar in its use of nitrate of silver and iodine, though in England it is used in a similar way, but by no means as freely and as commonly as here."

Dr. Engelmann's new departure consists essentially in the use of medicated absorbent cottons, with or without the addition of a powder-blower or gelatin pencils. The medicated tampons have the advantage, we are told, of giving support to the uterus, of acting continuously and evenly, and of being cleanly. The tampons may also be made of jute, and perhaps the best combination is a medicated jute tampon covered with a layer of the softer cotton. The powders used are those of alum, bismuth, tannin, salicylic acid, iodoform, and zinc. Next after these in value are the gelatin or iodoform pencils. The cotton or jute used is medicated with iron, boracic acid, alum, tannin, iodine, and other substances.

By the use of the powders or pencils and tampons, in endocervicitis, erosions, and other chronic uterine troubles the profuse discharge is often checked very promptly, and a healing process set in action. Dr. Engelmann does not recommend the glycerin tampons which are considerably used in New York. His "new treatment," though a good one, is not, we venture to say, very new; something very much like it—*i.e.*, the use of powder and cotton tampons—was, we believe, at one time quite the routine practice in Vienna. In New York also cotton tampons medicated with alum and other powders have been used for six or more years.—*Medical Record*, March 20, 1886.

ON RESORCIN IN THE TREATMENT OF ECZEMA.

There are few diseases for which such a number of various methods of treatment have been proposed as for eczema. The multitude of remedies praised as a cure for diseases of the skin is often embarrassing to the physician, who expects to find the same simplicity in the therapeutics of skin-affections as is established in the general practice. In the absence of any universally recognized treatment of eczema, the proposition of any remedy whose physiological and chemico-physical properties are suitable for the affection may claim our attention.

In the *Fortschrift* of January 5, 1886, Dr. A. Wyss publishes an essay intended to demonstrate the efficacy of resorcin in eczema. We abstract from this paper the main points of interest.

In the treatment of eczema two principal questions present themselves for consideration: 1, Is the eczema acute or chronic; and, 2, with which period of the affection have we to deal? These questions ought not be an-

swered only for each patient particularly, but also for each localization of eczema on the same individual. On one surface of the body, the eczema may have attained its period of desquamation, while on another the affection may still be in its papular phase. The remedies employed in chronic eczema would often have a disastrous effect if applied in acute eczema. In one word, strict individualization is an indispensable requisite with every case of eczema.

In the acute form of eczema the employment of directly healing applications is useless and better avoided. "To do nothing," says Rayer, "is the best treatment of acute eczema." All irritant measures, such as washes of cold water, are especially detrimental. Subjective symptoms, such as pain and itching, may of course receive a special medication by powders or alcoholic lotions, with the additions of camphor, phenic acid, chloral, menthol, and cocaine.

If there is any discharge, desiccant powders form an eligible application.

The period of desiccation calls for emollients, such as oil, glycerin, and pomades. One of the most frequently exhibited pomades is Wilson's preparation, which has the following composition:

R Benzoës pulv., gr. 75;
Adip. suilli, ʒiv.;
Digere, cola et adde
Zinci oxydati, ʒiii. M.
F. Unguentum.

In the chronic form of eczema the following indications are to be fulfilled: 1, To detach the scales and crusts which surround the affected parts; 2, to dry up such parts as are still moist; 3, to remove the infiltration, hyperæmia, and desquamation of the skin. The choice of the proper medicines and methods of treatment which will best fulfil these indications in each given case, and the perseverance in this medication, constitutes the secret of the successful treatment of eczema. After this brief review of the general therapeutics of eczema the author passes to the discussion of the special drug proposed by him as a cure of eczema, *viz.*, resorcin. This drug, discovered in 1864 by Barth, belongs to the group of dihydroxybenzols, in which two atoms of the hydride of benzol (C_6H_6) are replaced by two hydroxyls (HO). It is obtained by the fusion of the resin of galbanum or the benzoldisulfonic acid with caustic potash.

Resorcin presents small, colorless crystals,

striking a reddish tint on contact with air, is easily dissolved in water, alcohol, ether, and glycerin, less so in oils, fats, and vaseline. The taste of resorcin is sweetish and pungent, and its odor recalls that of phenic acid. The antiseptic properties of the drug, are well established, and, alongside of its antipyretic, caustic, and hæmostatic virtues, as demonstrated by the labors of Andeer, Brieger, and Lichtheim, qualify the drug *a priori* as an eligible application in eczema. Hitherto resorcin has found a limited but by no means an unsuccessful application in the catarrhal affections of the respiratory passages, in febrile affections, especially in connection with antipyrin, and, through the recommendation of Andeer, also in certain skin-diseases, such as erysipelas, scarlatina, pemphigus, leprosy, and wounds of an infectious nature, and burns.

The author of the paper which we are abstracting, Dr. Wyss, happened to suffer from an eczematous condition on both hands, and used a pomade of vaseline containing ten per cent. of resorcin with the view to lessen the intolerable itching subsequent to the vesicular eruption and the infiltration of the skin. The effect was surprising, itching and infiltration disappearing rapidly after the application of the pomade. These good results obtained with resorcin on his own person were later, likewise, obtained in the treatment of other cases of eczema. Wyss employed resorcin in the following forms :

1. As a powder, associated with poudre de riz, talc de Venice, and other bland bases :

R Pulv. amyl. oryz., ʒv;
Resorcini, ʒss-i. M.
F. pulv. subtiliss.

The hygroscopic tendency of resorcin offers, however, some difficulty in properly preserving these preparations.

2. In a solution of oil, which dissolves but little of the drug :

R Resorcini, gr. xv-xxx;
Ol. oliv.,
Ol. amygdal., ʒi.

3. In a solution of glycerin :

R Resorcini, ʒi;
Glycerini, ʒv.

4. In the form of a pomade :

Vaselini flav. sive axung., ʒv;
Resorcini, gr. xlv-lxxv.

Wyss tried the drug in three forms in nu-

merous eczematous affections of the nose, face, ears, and extremities. The following were the principal effects observed from this medication: The preparations of resorcin, applied on an eczematous eruption during its period of humidity, form, by the coagulation of the albumen of the secretion, a protective disinfectant cushion, which, without being irritant, stimulates the formation of the epidermis, and alleviates the pain and itching.

In the desquamative period, the pomade or glycerite of resorcin causes the fissures of the skin which may still exist to rapidly cicatrize. The new epidermis, stimulated by the action of resorcin, readily expands, and acquires the normal power of resistance.

Wyss details six cases of eczema successfully treated by preparations of resorcin. In all he has treated about thirty cases, and expresses himself well contented with the results obtained by resorcin. He adds that in no instance has he observed symptoms of irritation after the use of the remedy, such as have been observed after the internal administration of doses exceeding 45 grains. The most favorable periods to exhibit resorcin appear, in the judgment of Wyss, to be the times when the eruption shows a discharge, and when the drying-up process begins. In the former stage the inflammatory congestion has disappeared, and in the latter we can usually still find discharging surfaces and fissures between the scales and crusts. Wyss urges other dermatologists to try the remedy, and to confirm its curative value observed by himself.

THE TREATMENT OF OLD CORNEAL OPACITIES.

In the last number of Graefe's *Archiv für Ophthalmologie*, Dr. DANTZIGER advocates the treatment of old opacities of the cornea by friction performed daily, and continued for two or three months if necessary. When the opacity is of moderate size, but of considerable density, it is recommended that it should first be scraped away, and the friction, or "massage," commenced as soon as the epithelium has been reformed. The scraping is performed with a Graefe's knife, used in the manner in which one scrapes away a blot with a penknife. Antiseptic precautions are used, and iodoform is applied as a dressing; cocaine produces sufficient anæsthesia. Atropine and warm fomentations are used if the reaction be very great; by the fifth to the eighth day the epithelium has generally been reproduced

and the "massage" is then commenced. A minute piece of Pagenstecher's ointment is introduced, and the upper lid is then moved from side to side over the cornea with the forefinger, with a rapid to-and-fro movement, for about half a minute. Some hyperæmia is produced, which should not last more than a few minutes; if it last as long as half an hour, the treatment must be used cautiously, and may have to be abandoned. The author gives a detailed account of ten cases, in four of which the friction was preceded by scraping. With the exception of three, all were opacities which had existed in a stationary condition for more than three years, and in all except one (in which the whole cornea presented a grayish opacity) there was a very great improvement in vision, sometimes without any obvious clearing of the cornea. An improvement from $\frac{20}{200}$ to $\frac{20}{40}$ in three months would, perhaps, about represent the average result of the cases, but in some it was much better. Those who know how very intractable these cases are under ordinary treatment, will welcome any method which offers a reasonable prospect of ameliorating their condition; and should these results be borne out by wider experience, a very valuable addition will have been made to the resources of ophthalmic surgery.—*Brit. Med. Journ.*, February 20, 1886.

THE MANAGEMENT OF PLACENTA PRÆVIA.

DR. MALCOLM MACLANE offers the following rules as those which should best govern the treatment of placenta prævia (*Amer. Journ. Obstetrics*, March, 1886):

First.—In any case avoid the application of all chemical styptics, which only clog the vagina with inert coagula, and do not prevent hemorrhage. At the very first, the patient should be put in a state of absolute rest,—body and mind,—and a mild opiate is often desirable at this stage to quiet irritation.

Second.—Inasmuch as the dangers from hemorrhage are greater than all else to both mother and child, at the earliest moment preparations should be made to induce premature labor; and labor being once started, the case should be closely watched to its termination by the accoucheur.

Third.—In primiparæ, and mothers with rigid tissues, the vagina should be well distended, by either the colpeurynter or tampon, as an adjuvant to the cervical dilatation.

Fourth.—In the majority of cases generally, and in all cases especially where there is

reason to believe that rapid delivery may be required, it is more safe to rely upon the thorough continuous hydrostatic pressure of a Barnes's dilator than on pressure by the foetal parts.

Fifth.—Where the implantation is only lateral or partial, and where there is no object in hurrying the labor, bipolar version, drawing down a foot, and leaving one thigh to occlude and dilate the os, may be practised according to the method of Braxton Hicks, except in cases where the head presents well at the os, when,

Sixth.—The membranes should be ruptured, the waters evacuated, and the head encouraged to engage in the cervico-vaginal canal.

Seventh.—In the majority of cases, podalic version is to be preferred to application of the forceps within the os.

Eighth.—In some cases, in the absence of sufficient assistance or the necessary instruments, the complete vaginal tampon, in part or wholly of cotton, may be applied and left *in situ* until (within a reasonable time) it is dislodged by uterine contractions and the voluntary efforts of the mother. In case of favorable presentation,—occiput or breech,—the tampon will not materially obstruct the descent of the child, and in some cases the tampon, placenta, and child will be expelled rapidly and safely without artificial assistance.

Ninth.—The dangers of septic infection by means of the tampon or india-rubber dilators are so slight, if properly used, as not to be considered as seriously impairing their great value.

Tenth.—Whenever it is possible, dilatation and delivery ought to be deliberately accomplished, in order to avoid maternal lacerations.

Finally.—As cases of placenta prævia offer special dangers from post-partum hemorrhages, septicæmia, etc., the greatest care must be exercised in every detail of operation and nursing, to avoid conveying septic material to the system of the mother.

Absolute cleanliness, rather than chemical substitutes for that virtue, should be our constant companion in the practice of the obstetric art.

TEREBENE AND TERPINE.

DR. WILLIAM MURRELL writes to the *British Medical Journal*, February 27, 1886, that he has received so many letters from physicians in different parts of the country giving the

results of their experience with terebene in the treatment of winter-cough, that practically there has been an informal collective investigation. He states that out of ninety-four additional cases reported to him, distinct success is recorded in eighty-one. In six of the cases of failure, a further investigation showed that there had been an incomplete diagnosis, the patient suffering from some complication, such as aneurism or aortic disease, the existence of which had not been previously suspected. In ten cases the patient complained of nausea after taking the medicine, and in several instances when inhaled from lint, it excited coughing and apparently acted as an irritant. Dr. Murrell's explanation of the latter fact is that much of the terebene in the market is very impure. According to Dr. Murrell, terebene improves as it grows older, becoming bland and oily. Reports sent to Dr. Murrell also speak highly of the benefit of terebene in acidity and flatulency, and other forms of dyspepsia.

According to the Paris correspondent of the *British Medical Journal* of the same date, DR. DESCROIZELLES adds his testimony to that of Dr. Murrell as to the value of terpine in chronic bronchitis simulating tuberculosis. The patient was a boy $8\frac{1}{2}$ years old, small and delicate; he had been previously treated at the same hospital for pleurisy on the right side. He coughed, vomited, and spat blood; had night-sweats, completely lost his appetite, and was too weak to move. Very little could be learned concerning his antecedents. In the right infraclavicular region there were dulness on percussion, a cavernous *souffle*, and subcrepitant *râles*. The sputa were abundant, both mucous and purulent, and mixed with blood. The axillary temperature rose to 38.6° Cent. (101.5° Fahr.). The pulse was 120, and respirations 40. The chest over the part affected was painted with tincture of iodine, and a gramme (15 grs.) of phosphate of sodium was given daily. The child grew worse, hæmoptysis occurred several times, and there was alternate diarrhoea and constipation. The dulness on percussion became more and more marked at the apex of both lungs, but especially on the right side, where moist *râles*, almost gurgling sounds, were heard, also a cavernous sound. On the left side moist crackling sounds had replaced dry crackling sounds. The child grew weaker and refused food; his cheeks were sunken and flushed, and death seemed imminent. Glycerin and creasote were substituted for phosphate of sodium without any good result. Dr. Descroi-

zelles then decided to administer terpine. Two grammes (30 grs.) of this substance were dissolved in forty grammes ($1\frac{3}{4}$ oz.) of alcohol and twenty of distilled water, and the child took three or four teaspoonfuls of this mixture daily. A marked improvement followed; less sputa were expelled, and they were free from blood; the appetite increased, the general condition improved, and the patient became convalescent. Lime-phosphate and gentian wine were given instead of terpine. In the interval between the beginning of September and the middle of November the pulmonary symptoms disappeared, and the auscultatory sounds were normal. The child was sent into the country, apparently re-established in health.

THE PROPHYLAXIS OF ASTHMA.

DR. DAVID W. YANDELL (*American Practitioner and News*, March 6, 1886) states that he has obtained almost uniform success in his attempts to prevent attacks of asthma in children by the administration of bromide of potassium and atropine. The method is to give 10 grains of potassium bromide in a glass of seltzer water every morning on rising and at bedtime, while the $\frac{1}{16}$ of a grain of sulphate of atropine is added to the latter dose. This treatment should be continued steadily for several months, while the patient should live in the open air and take a cold sponge-bath daily, and may possibly require iron and strychnine. This method Dr. Yandell states invariably succeeds in children, while in adults asthma has usually existed so long that it has wrought changes in the pulmonary apparatus quite beyond the control of the remedies under consideration. Even in children the full effects of the drugs are only obtained when they are given with the utmost regularity during long periods of time, and in doses sufficient to produce their distinctive physiological effects. Dr. Yandell states that he has treated nine cases by this method occurring in patients aged respectively, one of 6 years, three of 10 years, two of 11, one of 12, one of 13, and one of 14. All recovered but two, and in neither of these was the treatment fairly carried out by the parents. None were dismissed under fifteen months, while two were under treatment for two years. In five of the nine cases the disease was hereditary. Eight of the nine were unmistakably neurotic, and this fact may serve as the reason for the success of the treatment.

*THE COMBINED USE OF COCAINE AND
NITRATE OF SILVER IN CERTAIN
SUPERFICIAL AFFECTIONS OF
THE EYE.*

At the meeting of the Medical Society of London held February 22, 1886, Mr. BRUDENELL CARTER (*British Medical Journal*, February 27, 1886) read a short paper on this subject, to the effect that while local applications of nitrate of silver were often of great service in congestive ulcerative affections of the eye, it was generally quite undesirable and unnecessary to allow its action to spread beyond the particular areas; one of its effects being, he said, to remove the corneal epithelium when allowed to come into contact with it. It was generally somewhat difficult to limit this action, owing to the pain caused by its use and the accelerated secretion of tears which ensued; and it was to mitigate these conditions that cocaine was so useful. By destroying sensation temporarily it allowed the operator to apply his remedy with all the delicacy and certainty he could desire, and the lachrymal secretion did not increase so as to interfere with what he was doing.

THERAPEUTICS OF BURNS.

DR. ALTSCHUL, a surgeon of a large steel-factory, having had an excellent opportunity of testing the various therapeutic measures, communicates his experience to the *Monatsh. f. prakt. Dermat.*, No. 1, 1886. All known, or rather recommended, remedies were tried, with the view of securing an ideal healing without suppuration. The aseptic measures were of course found the most and only eligible ones. Iodoform appears to have furnished the most satisfactory results. Only in burns of the first degree dressings with argillaceous earth proved superior to lessen the severity of pain. Iodoform can be said to prevent with certainty suppuration in burns of the second and third degrees. At first Altschul tried the powder-dressings; later a ten per cent. iodoform-gelatin, after the recommendation of Pick. As the latter, however, was found hard to preserve, he followed Unna's advice, and employed an iodoform paste, and in time arrived at the conclusion that the iodoform bolus-paste was the choicest application of all. The formula for this paste is as follows:

R Boli alb., ʒss;
Olei olivarum, ʒi;
Liq. plumbi subacetici, ʒvi;
Iodoformii, 10-20 per cent. = ʒii-iv.

In order to prepare this paste, the bolus is to be first mixed with oil, as otherwise the subacetate of lead would form an insoluble mass with the bolus. Finely-powdered roasted coffee disguises the odor of iodoform very effectually.

*THE TREATMENT OF VARICOCELE BY
EXCISION.*

The various methods adopted for the cure of varicocele go far to prove that as yet no one plan is so satisfactory as to leave nothing more to be desired. Of the various means which have been proposed, Mr. A. W. MAYO ROBSON (*Brit. Med. Journ.*, February 27, 1886) thinks that none equal in completeness and safety the complete excision of the bundle of enlarged veins.

After any radical operation for varicocele, there must of necessity be a greatly disturbed circulation in the scrotum, and a liability to hydrocele or slight orchitis, and this he has found occasionally even in subcutaneous ligation of the veins; but orchitis supervened only once, and then in a syphilitic subject, who had had specific orchitis a short time before being treated for varicocele.

The train of nervous symptoms frequently accompanying varicocele is often so severe as to demand treatment; and, when some tangible cause is found, such as a varicose condition of the pampiniform plexus, producing congestion and neuralgia, and ultimately atrophy of the testis, it is the surgeon's duty to give relief, especially when it can be done without danger. The operation of excision is performed as follows:

The skin of the scrotum, having been shaved and well washed, is enveloped in a carbolic dressing, which is left on for twelve or twenty-four hours preceding operation.

After the patient has been anæsthetized, and every antiseptic precaution adopted, the cord of the affected side is caught between the left finger and thumb over the site of the varicocele; the vas deferens, which is easily felt, is allowed to slip backwards, leaving the enlarged veins within the grasp.

A vertical incision of three-quarters of an inch is now made through skin and fascia, quite down to the veins which immediately bulge through the wound, and are caught between the finger and thumb of the right hand; the finger-nail then serves to break through a film of fascia which separates the veins from the vas deferens. A double No. 2 catgut ligature is passed round the bundle of

veins, and the two ligatures thus placed *in situ* are tied about an inch or more apart, the intermediate varicocele being completely cut away.

No bleeding occurs, as a rule, and the wound is so small, and falls so well together, that sutures are scarcely required. A small catgut drain may be left in, but this is not absolutely necessary. The wound is covered with carbolized gauze, and over this is placed a good pad of salicylic silk or wool. In some cases the dressings are not removed for a week, when the wound is completely healed; but, when a drainage-tube has been left in, it should be removed on the second day.

Mr. Robson reports a number of cases successfully treated by the above plan.

Reviews.

THE USE OF THE MICROSCOPE IN CLINICAL AND PATHOLOGICAL EXAMINATIONS. By Dr. Carl Friedlaender. Translated by Henry C. Coe, M.D. Pp. 195, 12mo.

New York: D. Appleton & Co., 1885.

The appearance of an English translation of Friedlaender's very popular and excellent little volume is a welcome addition to our book-lists.

For such of our readers who may not be familiar with the scope of the book, it may be of interest to indicate its contents. The text has been written entirely from the standpoint, and for the guidance, of the clinical worker, consequently it discusses only those subjects likely to be brought to the notice of the practitioner, making no pretension to systematic completeness.

Of the seven chapters, four are devoted to brief descriptions of the microscope, objectives and accessories most desirable for the special needs of medical work, reagents, methods of preparation, including an excellent review of the most valuable stainings.

The sections on the identification and staining of the schizomycetes will be found very valuable. To those not yet familiar with Gram's method of staining bacteria we strongly recommend a trial of this admirable method.

The remaining chapters give directions for examining living tissues, fluids, and secretions, including blood, sputa, pus, urine, etc., and, finally, solid elements and tumors.

In judging of the merits of the book, it must be distinctly borne in mind that its object is solely to facilitate clinical and patho-

logical investigations. The simplest means by which these ends can be obtained are usually the ones suggested. It follows, therefore, that many procedures described are crude in comparison with the nicety of the present approved methods of microscopical technique. Most will admit, however, the wisdom of Friedlaender in recommending only those simple manipulations which are possible for the busy man, to whom elaborate methods are but sad spendthrifts of precious time.

While Dr. Coe has earned our thanks by his translation, a somewhat more liberal rendering frequently would have improved the smoothness of the text. The retention of such words as "instrumentarium" certainly adds little to the enjoyment of the reader.

The title-page is faced by a reproduction (by no means an improvement on the original) of the excellent drawings by Friedlaender of a number of the more important pathogenic bacteria. The little book in its English dress will undoubtedly gain many new friends.

PRACTICAL HISTOLOGY AND PATHOLOGY. By Hensge Gibbs, M.D. Third edition, pp. 195, 12mo. Philadelphia: P. Blakiston, Son & Co., 1885.

The necessity of three editions within less than twice that number of years certainly argues well for the value and popularity of any book. Examination of the present edition of this little volume still further confirms the favorable opinion of its merits. The additions embrace new staining formulæ and other matters of interest. The restoration of carmine to its place among the stains was sanctioned by universal opinion.

The chapter on section cutting seems to have been neglected in the revision. Notwithstanding the very general use of the recent forms of sliding microtomes, all mention of these admirable instruments—by whose introduction the possibilities of microscopical technique have been greatly extended—is omitted; likewise descriptions of the methods of paraffine and celloidine embedding are wanting.

While fully appreciating the convenience of the freezing methods, evidently great favorites with our author, the ignoring of these very important recent methods, which are so well adapted to insure exact results, is to be regretted. In so excellent a guide a few hints regarding refined methods might with great propriety have been included. The book will continue to be a favorite with those entering upon practical histology, and is to be appreciated as a source of trustworthy advice.

SELECT EXTRA TROPICAL PLANTS READILY ELIGIBLE
FOR INDUSTRIAL CULTURE OR NATURALIZATION.
By Baron Ferd. von Mueller.

Detroit, Mich. Geo S. Davis.

In this, the latest work of Baron Mueller, we have a compact octavo volume of 450 pages, replete with useful information. In its original form the matter of this volume was presented as a series of contributions to the Victorian Acclimatization Society of Australia; but, being accessible to only a limited number in this connection, it was collected into a volume published for the government in Melbourne, 1876. That it supplied a long standing want is proved by the fact that it was soon reissued in India, under the auspices of the central government; in New South Wales, for the benefit of colonists; and went through a German translation in Cassel. Its issue, through the enterprise of a Detroit publisher, now makes it more generally accessible to American readers.

Colonists in a new locality, or persons of culture, desirous of improving their surroundings by a judicious cultivation of useful or ornamental plants, are often quite at loss for proper guides to the collection of suitable subjects for trial. While many experiments have been conducted, and much valuable information accumulated, this material is generally inaccessible to the persons most interested. Scattered through the proceedings of learned societies or stray local journals, it is practically lost. What was needed was a judicious compilation of this vast array of facts. This burdensome task Dr. Mueller has undertaken, and, as the volume before us testifies, has accomplished with signal success.

The species are arranged in alphabetical order, without regard to family relation, and are hence conveniently referred to. The notes under each species are concise, generally well selected, and in non-technical language, which will better meet the wants of the special class of persons for whom the book was prepared. Convenient lists are arranged at the end of the volume, bringing species together under such comprehensive heads as alimentary plants, embracing those yielding (1) herbage, (2) roots, (3) grain, (4) fruits, etc.; condiment plants, hedge plants, dye plants, fibre plants, scenic plants, etc. The geographical index, which embraces the plants of each country, is also an interesting feature.

In several minor points of classification we differ from the arrangement followed. For instance, nearly all the Coniferæ, including *Abies*, *Larix*, and *Picea*, are classed as species

of *Pinus*. In a work like this the points of difference should have been insisted upon, since they are so apparent even to the unscientific. In only one instance have we noted a positive error,—i.e., the North American tulé is *Scirpus validus*, and not the root of a *Sagittaria*.

On the whole, however, it is a very satisfactory book, and we hope it will soon be in the hands of all lovers of plants.

PRACTICAL HUMAN ANATOMY: A WORKING GUIDE FOR STUDENTS OF MEDICINE, AND A READY REFERENCE FOR SURGEONS AND PHYSICIANS. By Faneuil D. Weisse, M.D., Prosector (1863-65) to the late Valentine Mott, M.D., LL.D., Emeritus Professor of Surgery and Surgical Anatomy, Medical Department of the University of the City of New York; Professor of Practical and Surgical Anatomy, Medical Department of the University of the City of New York; Professor of Anatomy, New York College of Dentistry. Royal octavo, 468 pages of text. Illustrated by 222 lettered plates.

New York: William Wood & Co., 1886.

This book is evidently the work of a thorough and skilful anatomist, and one who has devoted many years to the teaching of practical anatomy, knowing exactly when and how to show his work so as to be viewed in the best light. The author has apparently intended the book more for the use of the student in the dissecting-room than for the general practitioner, although the latter will find the plates a most valuable and ready field of reference.

It is arranged in a series of twenty-seven dissections, including all parts of the body excepting the eyeball and auditory apparatus, and we agree that these hardly come under the scope of such a work.

At the beginning of each dissection the primary incisions for the removal of the skin are shown in wood-cuts, which are much better, being fewer in number and simpler, than is figured in Gray and many of our dissectors. All through the text and at each stage of the dissection much valuable information is given in small type, stating what is to be removed and what preserved as the dissection progresses. We are glad to see the use of the scissors advised, which are seldom used in this country except by prosectors and advanced students.

No reference is made to surgical or applied anatomy, and nothing is spoken of which cannot be demonstrated with the unaided eye; therefore the structure of any part that requires the aid of the microscope will have to be sought for in histologies.

The plates, two hundred and twenty-two

in number, are nearly all from nature. They are indeed works of art in their way as faithful studies of actual conditions, and represent an amount of work on the part of the author and artist that cannot fail to be appreciated by the student and practitioner.

The plates of the male and female perineum, thigh, region of the neck, and thorax are especially worthy of mention.

The text is short, and in many instances unsatisfactory, and with great tendency to repetition. For instance, we find the description of the anterior tibial nerve occurring in four separate paragraphs in seven consecutive pages. The mammary gland is disposed of entirely in six lines.

The anatomy of the inguinal region, particularly the part which concerns hernia, is not made as clear in the text or drawings as might be desired, and we fail to find any mention of the inguinal canal whatever. This might be treated without the fear of encroaching upon the field of surgical anatomy in any way. Some errors and omissions have crept in, *e.g.* :

In the ligaments of the knee-joint no mention is made of the ligamentum mucosum or ligamenta alaria. Although composed of synovial membrane, the former is the first thing noticed when the knee-joint is opened anteriorly, and plays a most important part in retaining the patella in position after amputation through this articulation.

The subcrureus muscle is described as being attached to the anterior ligament of the knee-joint, whereas it is inserted into the upper portion of the synovial sac of this articulation, its function being to raise the membrane when the leg is extended, so as to be uninjured by the play of the patella.

In the articulations of the fingers and toes a posterior ligament is described, rather contrary to present teaching, as the extensor tendon covers the dorsal portion of the joint, and plays the part of a ligament.

The three phalangeal rows are mentioned as composed of five phalanges, four phalanges, and five phalangettes. If this were generally adopted it would save much unnecessary confusion in speaking of the finger.

We find the scalp mentioned as being composed of but three layers, whereas five are easily demonstrable.

The anconal space, spoken of as just anterior to the elbow-joint, is divided into two fossæ by the biceps tendon, and is analogous to the popliteal space in the lower ex-

tremity. We are at a loss to see why it should be so called, as anconal pertains to the region on the opposite side of the arm.

We venture to find fault with some parts of Professor Weisse's book, not from any spirit of hostility, but rather to suggest for future editions. We congratulate the author on his book, and also on procuring the services of so talented an artist as Mr. Maximilian Cohn.

Typographically the volume is most praiseworthy, and the publishers, William Wood & Co., have done their part in making the book most acceptable to the profession.

THE METHODS OF BACTERIOLOGICAL INVESTIGATION.
By Dr. Ferdinand Hueppe. Translated from the German by Hermann Biggs, M.D. 12mo, pp. 214.
New York: Appleton & Co., 1886.

The original of this translation appeared in February, 1885, and the leading points of value in it have already been incorporated and presented to American students in Dr. Dolley's "Technology of Bacteria Investigation" (Boston, S. E. Cassino & Co., 1885). The present translation is, however, none the less welcome. It enters well into details in describing methods, is illustrated with some thirty wood-cuts of apparatus, and devotes a few pages to the morphology of bacteria. The colored plates of the original have been omitted in the translation.

The author—docent in hygiene and bacteriology in the chemical laboratory of R. Fresenius in Wiesbaden—has been a student of Prof. Robert Koch, and prepared the book at the request of that investigator, the only other books on methods in German at that time being Plaut's "Färbungs Methoden zum Nachweis der faulniss und pathogenen Mikroorganismen" and Kaatzer's "Technik des Sputum Untersuchungs auf Tuberkel-Bacillen." These were both superficial pamphlets, and the best articles on the subject were unavailable from being scattered through various journals and reports, and hidden in accounts of experiments.

The subject is treated in seven chapters; spontaneous generation and morphology are handled briefly in the first and second, followed by directions for staining and mounting.

Chapters three, four, and five are devoted to culture methods, inoculation, and general biological problems respectively, while the sixth chapter treats of the special methods employed in the investigation of earth, water, and air from a hygienic stand-point. In the last chapter bacteriology as an object of instruction is considered.

The importance of instruction for medical students in the methods of investigating bacteria and in the relations held by them to special diseases, hygiene in general, and many physiological problems, is being daily more thoroughly appreciated. Copenhagen, Munich, Göttingen, Breslau, and Wiesbaden now furnish special courses of instruction in connection with their respective universities. In this country special instruction can be had in the Carnegie Laboratory of New York, in the Biological Department of the University of Pennsylvania, and elsewhere; but as yet there have been no special laboratories established for bacteriological research.

Dr. Hueppe is right in saying (p. 213), "The actual every-day necessities lie at present more in the preparatory courses. Every practising physician, and especially every medical officer, is desirous of so far informing himself concerning these methods as to be able to follow intelligently the recent investigations, since the morphological and biological foundations of the general processes of decomposition and the ætiology of infectious diseases have assumed tangible form through the development of the methods."

Bacteriological instruction should, however, be placed in the hands of men thoroughly versed in the technique of the immediate subject, and at the same time possessed of a training in general biology sufficiently broad to enable them to maintain a conservative position amidst the wrangling of rival investigators.

The bitterness that exists between Koch and Pasteur should not be shared by American physicians, and the unseemly haste with which the medical profession have chosen sides in questions concerning the ætiological agency of bacteria should in the future be avoided.

Anything tending to enable the would-be investigator to select the good out of the conflicting experiments constantly reported is of value. For this reason Dr. Biggs's translation of Hueppe's work is to be welcomed. The work of translating has been well done; the index is complete; and, while the book does not replace or displace any of the works already in the market, it will be found a valuable addition. There is now no excuse for idleness among American investigators; with such books at hand as are to be had in English by Klein, Stenberg, Dolley, Woodhead, and Biggs every essential step in manipulation may be acquired, and complete references found to all papers up to the last few

months in connection with any special branch of the subject.

ORGANIC MATERIA MEDICA AND THERAPEUTICS. By James Young Simpson, M.D.
New York: J. H. Vail & Co., 1885.

The writer has compiled this book with a view to affording the medical profession the use of a synoptical materia medica. Dealing with organic remedies, under each head we find the English name, origin, natural order, habitat, constituents, description, solubility; then its general, physiological, therapeutical, and toxicological action, and its various pharmaceutical preparations. Everything is concisely stated, and if at times somewhat dogmatic, the author pleads the necessity for brevity and his own careful study of authorities. As a means of impressing the outlines of materia medica and therapeutics on the mind the book will prove useful. The practitioner who would refresh his memory, as well as the student, may read this book with profit.

ESSENTIALS OF VACCINATION: A COMPILATION OF FACTS RELATING TO VACCINE INOCULATION AND ITS INFLUENCE IN THE PREVENTION OF SMALL-POX. By W. A. Hardaway, M.D., etc.
St. Louis: J. H. Chambers & Co., 1886.

The author has collected together about all the useful information concerning vaccination that is extant. His manner of treating the whole subject is unpretentious and modest. For most of his facts he gives his authority, and a perusal of his book—the operation being simple—will make any person of average understanding a better and more intelligent vaccinator than most men who vaccinate. Of the American vaccinator he has by no means a high opinion. He quotes Reynolds's system for his authority in saying "that vaccination has been worse performed generally in England, its birthplace, than in any country in Europe;" but adds, "I doubt if there is a civilized land where less is known of the theory and practice of vaccination than in America." This is owing to "vaccination from arm to arm being comparatively unknown." Of course, vaccination from the "scab" meets with no support from him; yet we imagine it possible that the value of such vaccination has been much underrated, and would hazard the opinion that had such vaccination been thoroughly performed,—*i.e.*, with several insertions and from carefully selected human crusts, even though of long descent,—the individual so vaccinated would have fared as well in the presence of contagion as the average population vaccinated with calf lymph.

The great uncertainty of the latter leads to so many being left in the unsuccessful list, while its violence at times has been simply terrifying, not only to parents and friends but even to the vaccinator himself. Certainly, in regard to the transmission of vaccinal syphilis there seems to be less danger, in using human crusts, well selected, than in arm-to-arm vaccination.

Of the danger of transferring bovine diseases in general the author makes light, though why and on what just grounds he fails to say. Of one thing, however, the reader will be thoroughly convinced—if convinced he ever can be—after reading Dr. Hardaway's little book, and that is of the inestimable value, despite all drawbacks, of vaccination.

CLINICAL NOTES ON UTERINE SURGERY, WITH SPECIAL REFERENCE TO THE MANAGEMENT OF THE STERILE CONDITION. By J. Marion Sims, A.B., M.D., etc. Memorial Edition.

New York: William Wood & Co., 1886.

The speculum of Sims was the gate of gynecology though which, and through which alone, the eager hordes pressed on to the fertile fields beyond; and they are still pressing on. The extremely modest title of Dr. Sims's book scarcely prepared the medical world for its contents. Extreme modesty of a certain sort marks its pages, though dealing with topics of the most delicate nature, and at a time, too, when the world was not yet educated to its present insensitive conditions as to such matters, at a time when the student was highly favored who was admitted to view operations of the character herein described. In fact, Dr. Sims's style in the treatment of these topics is to be eminently commended, much more, perhaps, than his experiments in regard to the sterile condition which he so carefully narrates; and it is probably fortunate that these experiments and their result in practical failure were so honestly set forth by so eminent a man at so early a stage in the growth of gynecology. Had this branch of the art been pursued as eagerly as some others, it would soon have required a child far wiser than the proverbial one to "know his own father." But in reading again this reprinted work one is struck at every page with the immense value of Dr. Sims's labors. So many of its suggestions and procedures have become household words and household facts in the medical world that we have ceased to remember our indebtedness. The publishers have done us all a service in the reissue of the book, and those who do not possess it

should hasten to own one of the few true classics of modern medicine.

DRAINAGE FOR HEALTH; OR, EASY LESSONS IN SANITARY SCIENCE. By Jos. Wilson, M.D. Second edition, with Important Additions.

Philadelphia: P. Blakiston, Son & Co., 1886.

The lessons are easy, but the scholars are often dull of understanding. The book is devoted mainly to drainage. It deals with general principles, well illustrated by cases in point. The grand principles of drainage—of fields and swamps, as well as the streets and houses of the city—are forcibly put before us. The rural resident will find as much instruction in the book as the citizen who dreads typhoid and diphtheria. The subject of traps is discussed, and, leaving the subject somewhat, we have a chapter on parasites, and some declamation concerning boards of health. The wood-cut illustrations are intelligible, and the author's style interesting, and one gets a good deal of information on the kindergarten principle before he knows it. It is a good book for the general reader, since it is sound and not too technical.

ELEMENTS OF PHARMACY, MATERIA MEDICA, AND THERAPEUTICS. By W. Whittle, M.D. Third Edition. London: H. Renshaw, 1886.

This is a small volume of nearly six hundred closely-printed pages; the first half of which is occupied with the discussion of pharmacy, administration of medicine, and materia medica; the last half being devoted to therapeutics and certain other matters. The materia medica refers to the British Pharmacopœia; and the description of the various remedies, although exceedingly brief, is sufficient we suppose for the purposes of the medical student. The discussion of therapeutics is on the whole good, although we notice certain things which seem to us might be better. Thus, in iodoform the exact amount which it is dangerous to use on an external wound should be stated in grains, and we doubt very much the truth of the assertion that pilocarpine is eliminated by the kidneys and not by the skin.

The close relation of this book to the British Pharmacopœia will prevent its being used in this country by medical students, but a careful looking over of a good many of the articles convinces us that the work well deserves the success which it has received in England. The writer is apparently well posted in English literature, at least, and is evidently a close reader of the THERAPEUTIC

GAZETTE. New remedies, such as arbutin, boldo, tannate of cannabin, hyoscine, delphine, receive brief but careful consideration. At the close of the volume is a most elaborate table of the chemical reactions of the official remedies, which we have no doubt is very valuable to students who have to pass examinations in chemistry, and affords most excellent material for rapid forgetting. In contrast with this table, as affording excellent material for permanent remembrance, are the few pages devoted to prescription-writing. They seem to us the best consideration of the subject that we can remember to have read. The so-called index of poisons and their antidotes is, to our thinking, very brief, and especially and emphatically do we dissent from the statement that "Murrell's 'What to do in Poisoning' should be in every practitioner's instrument-bag." The contents of that book ought to be in every practitioner's head. The subject of poisons is so important, and covers so little ground, and the knowledge when wanted is wanted so badly, that there is no excuse for the practitioner's not being thoroughly posted in it.

REVUE SCIENTIFIQUE.

Recent numbers of the *Revue Scientifique* have contained the following articles of general medical interest.

February 6, 1886 :

Military Medicine in 1866 ; The Fermentation of Milk (M. Bourquelot) ; Biographies of Carpenter, Huxley, and Hooker.

February 13, 1886.

Instinct and Intelligence (M. Hermann Fol) ; The Derivatives of Menthol (M. Arth).

February 27, 1886.

Instinct and Intelligence (M. Hermann Fol) ; Sterility and Fecundity of Parisian Families.

Correspondence.

THE ABDOMINAL BANDAGE AFTER LABOR.

To the Editors of the THERAPEUTIC GAZETTE :

GENTLEMEN :—On page 333 of the *Medical Record*, under the caption of "The Abdominal Bandage after Labor," attention is directed to Prof. Czerny's ideas of abdominal bandaging, as set forth by him in the *Centralblatt für Chirurgie*, January 16, 1886. I would like to ask the question that often presents

itself, What is the general custom of American practitioners in reference to the use of the bandage in question? The popular opinion is that the bandage is designed exclusively to aid in restoring the form possessed previous to pregnancy. I had always supposed the professional idea in the use of the bandage was to give support to the uterus and its appendages during the period of involution. I believe the theory wrong and the practice worse than useless. In point of fact, the results sought after by those who advocate the use of the bandage are either negative or directly opposite those desired. Especially is this true, to say the very least, of the bandage as commonly applied.

Instead of a support, it actually retards the restoration of the uterus to the normal condition. After an experience of several years, with a fair average of cases, country practice, I have come to regard the bandage of so little importance that I leave its use almost entirely to the wish of the patient. To some it carries with it a sense of comfort in supporting the abdominal parietes that may recommend its use in exceptional cases. Many of the diseases from which the mothers of human-kind are suffering refer their origin to the lying-in chamber. Not because, as some would infer, of the absence of, or the improper use of, the abdominal bandage, but because of the inconsistencies indulged in by many subsequent to the parturient act. Women will insist on leaving their beds and performing many items of work not permissible in view of their physical condition, and this, too, in opposition to the dictates of common sense and the earnest protests of their medical attendant. And the results are confronted almost daily by the busy practitioner in the form of displacements, cervicitis, metritis, ovaritis, and many other diseases of the uterus and its appendages, with their concomitant symptoms and consequent sufferings and misery. The question is not easily answered, How can the accoucheur impress upon those subject to his professional care the importance of giving rest to those delicate and highly sensitive organs that have but recently and are still undergoing important changes? The beauty and symmetry we so much admire, the strength of body and vigor of mind so essential to woman in the discharge of her maternal duties, depend more upon the proper observance of natural law than upon any mechanical contrivance or device of man.

E. E. BRITTON, M.D.

SPENCER, OHIO, March 23, 1886.

VIENNA.

(From our Special Correspondent.)

ANTIPIRETICS IN VIENNA.

We find hyperpyrexia treated in Vienna not only by drugs, but by the application of cold in compresses, packs, baths, and in a most efficient and convenient manner by Leiter's coils, or "kühlapparat." This consists of flexible metal tubing, wound in coils of varying shapes and sizes, so made as to fit different regions of the body. These coils are connected by rubber tubing with receptacles placed above the patient; cold water traverses the coil, and is discharged by siphon action. A cold compress may be laid over the skin, and the coil lightly bandaged upon this. These coils are lighter, more comfortable for the patient, and more convenient and cleanly than ice-bags. These coils may be connected with an alcohol lamp and hot-water reservoir, and warm applications made if desired. This apparatus has been used in several American hospitals. It has been made lighter and more convenient, until for both doctor and patient it is efficient and agreeable.

Cold compresses are especially used in high temperature with local inflammations, as in puerperal sepsis. Cold packs, followed by the wrapping of a blanket or dry sheet about the patient, are used frequently with children. Hospital wards have movable bath-tubs which can be brought to the bedside, and in which a fever patient can be immersed. Antipyretic drugs in common use are quinine, antipyrin, thallin, and hydrochinon. The latter two are used much less frequently than the former. For rheumatic hyperpyrexia salicylate of sodium is given.

In the clinical wards of Prof. Bamberger antipyrin is given in doses varying from 2 to 3, 4, or 5 grammes (15 to 75 grs.) in twenty-four hours in all hyperpyrexias except typhus abdominalis and rheumatism. In the former quinine is given, in the latter sodium salicylate. Depression is rarely observed after the use of antipyrin; a general erythema is the most common inconvenience experienced. For typhus abdominalis the stimulant properties of quinine are desired. In this clinic thallin is rarely used. Cold applications and packs are in constant requisition.

In the clinic of Prof. Nothnagel experiments have been made by Dr. Jaksch with thallin, and his results have been published in a reprint from the *Zeitschrift f. Klinische Medizin*. He states that thallin is worthy of a further trial, and especially in cases where a

rapid reduction of temperature is necessary. In his experiments the hydrochlorate, sulphate, and tartrate were used, the last being least desirable. The effects of thallin resemble those of kairin, but its use is not attended by the unpleasant stomach and general disturbances which often follow the giving of kairin. Cyanosis and collapse did not occur. Free perspiration accompanies a reduction of temperature, and a subsequent rise of temperature is ushered in by a chill. A lessening of pulse and respiratory rate was observed. In doses of $\frac{1}{8}$, $\frac{1}{4}$, or $\frac{1}{2}$ gramme (2 to $7\frac{1}{2}$ grs.) perspiration and fall of temperature occurred one-half to one hour after taking. Minimum temperature was reached in two, three, or four hours. It will be observed that the best results from thallin were obtained with comparatively small doses, and that its use was followed by no ill effects. The formula for thallin is C_6H_5NO . Its salts have a somewhat bitter, aromatic taste, are very soluble in water; solutions are acid, and give with ferric chloride a green color.

Cases of sepsis treated in the wards of Prof. Nothnagel are given sodium salicylate, alcohol in free doses, and are treated also by cold applications.

In children's diseases Prof. Monti recommends the very cautious use of antipyretics, because of their depressant effects. He prefers quinine and the application of cold.

Prof. Wiederhofer, at the Saint Anne's Children's Hospital, uses in the hospital antipyrin with good results. In ambulatory cases he does not trust the parents or friends of the child to administer antipyrin, but prescribes quinine instead. He uses also very commonly cold compresses and packs.

In Prof. Spaeth's lying-in wards antipyrin is given to reduce temperature in gramme (15 grs.) doses three times in twenty-four hours. Quinine is used when collapse is imminent. The local use of cold is a routine practice for all puerperal fevers. In the clinical wards of Prof. Carl Braun hydrochinon is a favorite antipyretic. It is given in doses of $\frac{1}{2}$ gramme, repeated in an hour if needed. Salicylate of sodium is also used in doses of 1 gramme, repeated several times until a fall of temperature occurs. Antipyrin is also given, and no ill effects from depression and collapse have occurred in its administration.

Cold baths are not often employed. Ice-bags are placed upon the abdomen in abdominal inflammations.

In hyperpyrexias occurring in Prof. Billroth's wards antipyrin is given in free doses,

and Leiter's coils are used. In Prof. Albert's clinic quinine is usually administered in pyæmia and surgical fever. As one would expect, antiseptic surgery has little fever to treat, and infrequent occasions for the use of antipyretics.

BERLIN.

(From our Special Correspondent.)

HENOCH ON THE TREATMENT OF PERTUSSIS—NOTE ON THE CASE OF DIPHTHERIA TREATED BY GALVANOCAUTERY—ICHTHYOL.

It will be interesting to our readers, we hope, to gain a full insight into the therapeutics of whooping-cough, as advocated by Henoch. The following, originally a clinical lecture on the subject, embodies the principal views of the Berlin authority.

Pertussis is an affection the treatment of which confers but little credit on those who have embraced the healing art. The enormous figure of the remedies alone, recommended since the oldest times, against this affection is proof enough of its incurability. We know no drug capable of aborting the affection or shortening its convulsive stage; while on the other hand, in its third phase, the so-called stadium decrementi, when the natural healing process has set in, every remedy is apparently successful. The numerous drugs which, following the recommendation of other physicians, have been tried, have been nearly all discarded. At present, Henoch relies solely on one remedy, viz., morphine, which is even superior to the vaunted belladonna medication, and is at least able to lessen the gravity and frequency of the paroxysms, especially the nocturnal ones, without, however, influencing the general course of the disease. Henoch usually prescribes the following:

R Morph. acet. s. mur, gr. $\frac{1}{4}$ – $\frac{1}{2}$;
Aq. dest., $\frac{1}{2}$ i;
Syr. alth., $\frac{1}{2}$ ss. M.

S.—Two to four times daily a teaspoonful.

If excessive somnolence should set in, the drug is at once to be discontinued. In one instance a child, being treated by morphine, slept for eighteen consecutive hours without being interrupted by the paroxysmal coughs, which of course returned after the passing off of the narcosis. In another case, that of a six-months-old child, there was an actual intoxication proceeding with collapse, contraction of the pupils, and sopor, which, however, readily yielded to cold affusions and analeptic measures. It is therefore necessary to in-

struct the nurses and mothers in every instance of the nature of the prescribed medicine. Using the proper precautions, Henoch states that he has never experienced any accident with the morphine mixture, even if half a teaspoonful of it were given daily for several weeks. He consequently feels justified in preferring this drug to all other narcotics, especially to the dangerous atropine. Still, he regards the morphine only indicated in the graver cases, marked by at least twenty paroxysms within twenty-four hours. In milder cases, inhalations of carbolic acid recommend themselves, which on the ground of the alleged—but hitherto not yet demonstrated—parasitic nature of the affection, appear even theoretically indicated, and have recently acquired a certain reputation with many practitioners of renown, such as Thorner and Burchard. In Henoch's experience this medication has not furnished any constant results, its effects being sometimes remarkably favorable, sometimes doubtful, or again wholly negative. Injurious effects at least have never been witnessed from these inhalations. Their application can be executed in various ways. Henoch uses a one-half per cent. solution of carbolic acid by means of an atomizer, or if this procedure meets with difficulties, orders the air of the sick-room to be impregnated with the same evaporating solution, or a sponge saturated with it to be hung up at the child's bed, over its head, and have the sponge placed several times daily before the nose of the child for a period of several minutes. Other inhalations, such as those of chloroform, benzine, salicylate of sodium, oil of turpentine, tannic acid, and quinine, have all received fair trials, but have not given the expected satisfaction. The same holds true of the internal use of bromide of potassium, of hydrate of chloral, and of quinine. Following the instruction of Dr. Sauerhering, of Stettin (*vide THERAPEUTIC GAZETTE*), the systematic exhibition of quinine in gradually increasing and then decreasing doses has also been tried, and again convinced Henoch that the morphine medication and the carbolic acid inhalations were the best treatment of whooping-cough.

Therefore the idea of aborting or lessening the duration of the affection will have to be abandoned, and the parents must be instructed that a mitigation of the attacks is all that can be expected from the treatment. Fresh air is a decided adjuvant to the prescriptions, though damp and rough weather and the existence of a pronounced bronchial

catarrh contraindicate an out-door sojourn. If the child be attacked during the summer months, one will often be asked whether a trip to the sea-shore be advisable or not. Henoch says that he has often complied with the wishes of parents in this respect, but never saw any benefit from such a change of locality, and the only, though lamentable, result of the journey was often the infection of previously healthy children which came in contact with the sick child at the sea-shore or watering-place. Only exceptionally, as in his own child, he observed a characteristic pertussis disappear in fourteen days after the child had been sent to the Reichenhall Springs. Still, he believes with Trousseau in the existence of so-called abortive cases of whooping-cough, and that the affection in the case alluded to belonged to this category. Trousseau, by the way, has reported a case of genuine pertussis which aborted after a three days' duration.

Your correspondent has obtained some additional data in reference to the young girl treated at the Berlin Charité for diphtheria with actual cautery.

The girl, Martha Tegge, 8 years of age, was presented for treatment on February 9 with diphtheritic deposits on both tonsils, though the uvula and post-pharyngeal wall were free. Decoction of quinine and gargles with chlorate of potassium were ordered. The pulse was 132 and the temperature 38.3° C. On the 10th the cauterization was performed,—*i.e.*, two days after admission to the hospital and about five days after beginning of the disease. This shows that the case was by no means a highly suitable one for the cauterization treatment, as the very initiatory phase of the disease, which can alone be regarded as the proper time for cauterization, had already passed. Pulse 100, temperature 116°, after the cauterization. From this date the course of the pulse and temperature was fluctuating, though a gradual and steady improvement was registered with both. On the day following the operation the deposit had materially decreased in extent, and of course assumed the desired traumatic character, instead of its prior septic one. On the 13th the deposit was pushed off. Unfortunately, the infra-maxillary glands became swollen, assumed a phlegmonous nature, and kept up an elevated temperature. The glandular abscess being opened, the temperature at once went down, and a satisfactory state of the subjective health appeared.

On the 1st of March the patient was seen

for the last time, and was just about being discharged as in every way cured.

It is to be added that both the extent of the deposit and the high elevation of temperature justified the attending physicians in regarding the case from the beginning as a hopeless one. Prof. Henoch will, of course, make further trials with the cauterization in diphtheritis.

The testimonies of the high therapeutic value of ichthyol are too numerous and come from too authoritative sources to be overlooked. There are, however, two drawbacks attached to the remedy which will prove a serious obstacle to its gaining a firm hold with the regular practitioner, *viz.*, the secrecy of its preparation in the hands of a few men (the Ichthyol Company, Cordes; Hermann & Co., in Hamburg), and its liberal eulogization for far too many affections in the lay press.

Your correspondent had an opportunity of trying the local application of ichthyol in six cases of painful tumefaction in the knee, elbow, and other joints following upon various traumatic accidents, such as sprains, fractures, and luxations, and must express an unqualified satisfaction at the rapidity and completeness with which both swelling and pain disappeared under its use. These tests of the remedy were made during a trip from Hamburg to New York on the German steamer "Polynesia" on the crew and passengers, and were duly recorded in the medical journal of the vessel.

The principal utilization of the drug is said to consist in its specific anti-rheumatic virtues, though some clinicians are very positive in declaring the salicylic acid and its allied sodium salts as unquestionably superior. True, Dr. Schweninger, Professor of Diseases of the Skin at the University of Berlin, by the dictatorial grace of Bismarck, praises the drug as an anti-rheumatic of the highest rank, and Bismarck, having been relieved from untold suffering by the aid of ichthyol, did not hesitate to allow his illustrious name to figure as a recommendation of the medicine.

Prof. Schweninger also claims that ichthyol is an unexcelled remedy in neuralgia, sciatica, muscular rheumatism, and in all skin-affections. Your correspondent knows of a case of ichthyosis and of psoriasis which were cured by ichthyol. There is one thing, however, connected with the drug which we do not quite understand, *viz.*, the alleged necessity, especially in rheumatism, to take the drug internally simultaneously with its external application.

We had an interview some little time ago with Captain Rühn, who is one of the firm of the ichthyol company, and who volunteered some interesting points concerning the discovery of the drug. Schroeder, a chemist of Hamburg, was sent by several merchants of Hamburg to Styria, in order to ascertain the nature and products of certain mines which these merchants intended to buy there. He accidentally discovered in this visit a curious stone, which, on a closer examination, revealed its descendancy from antediluvian fish deposits. Chemical treatment of this stone gave in time birth to the product which we call ichthyol. Profs. Schotten and Baumann vouch for the absolute harmlessness of the remedy.

We learn that an ointment, an oleate, a soap, and various plasters have likewise been prepared from ichthyol.

Notes and Queries.

NOTES FROM THE CLINIC OF PROF. J. M. DA COSTA AT THE PENNSYLVANIA HOSPITAL.

Aneurism of the Aorta relieved by Iodide of Potassium.—This woman has been in the hospital for some time; when she first came in she complained of a small throbbing lump situated in the episternal notch, and which was very painful. She had first noticed this lump about two years ago, and while it has been growing larger, its course has been somewhat variable, for at times it has seemed to diminish to the size that it was when originally noticed. She has had, during this time, very frequent attacks of dyspnœa and palpitation; in fact, she says that she has rarely been free from these conditions. She has also been troubled with cough, and, at times, has had some difficulty in swallowing. Her appetite has always been fair, her bowels normal, and there is nothing wrong to be noted about her urinary function or apparatus. Her eyesight and hearing are both good. She cannot lie on her left side, but can usually derive relief from the dyspnœa by lying on her back. The cough which she has is somewhat croupy in character and is worse at times. She is now better in reference to the inability to lie on her left side, and can assume various positions without so much discomfort. There is a great deal of pain about this tumor, and recently the glands in its vicinity have become enlarged. She suffers also from vertigo, and says that she every now and then takes cold, when all her symptoms become aggravated;

at these times she will suffer from nausea, but has never had any œdema. The main symptoms, then, in this case, are a pulsating tumor, just above the sternum and a little to the right of the median line, associated with dyspnœa, and at times quite severe attacks of vertigo. At present all the symptoms are much better than when she came in, so far as their urgency goes, though we can still plainly see the tumor, which, however, is smaller than it was at the time of admission, the dyspnœa is scarcely complained of, and the vertigo not at all. When she came in the signs of an aneurism were obvious,—it could be nothing else,—and we have the gratification of knowing that it has clearly diminished in size. Dr. Da Costa states that he never had any doubt about the diagnosis. As regards the condition of the pulse, a very perceptible difference may be noted: the right is much stronger than the left, this fact being noted in the temporal as well as in the radial artery. There is, apparently, no difference in the pupils, but this woman has those eyes where it would be a difficult matter to note any very slight disparity. The heart is not increased in size, and there is no murmur. The respiratory murmur is good in both lungs, though it is rather feebler on the right than on the left. The pulsation at the notch of the sternum is still present, but it is only moderate, and when the stethoscope is placed over it no murmur is heard, but there is a long, loud, wavy first sound, produced by the expansion of the sac, followed by a short second sound. The glands about the neck are still enlarged, more markedly so on the right and but little on the left, though some time ago they were very plainly enlarged on the left. No murmur can be heard in the right carotid, and it never was present. Now, there can be no doubt about the diagnosis; when we consider the presence of a pulsating tumor, croupy cough, pain, a wavy first sound, dyspnœa, they all indicate a pressure on some nerve, most likely the inferior laryngeal nerve. Often, in such cases, the use of the laryngoscope will aid in the diagnosis, for occasionally one vocal cord will be paralyzed from this pressure, while the other will be normal. Just now all the symptoms are better, but there is no doubt that we have to do with an aneurism, and there is also no doubt as to its location: it is surely located in the arch of the aorta. There is no doubt either that it has markedly decreased in size. It is obvious that you should be very careful in making a diagnosis in such a case, for an error might be fatal. If, in connection

with the enlarged condition of the glands, you were to mistake this pulsating tumor for a scrofulous gland and plunge a bistoury into it, the result would not be very satisfactory. This improvement has taken place under the free use of iodide of potassium. This woman has had 15 grains thrice daily, which is a very full dosage for her, because every now and then frontal headache and coryza will demonstrate that she possesses an unusual susceptibility to the drug, and its use must then be intermitted. She has been on this treatment since the 19th of January, and has had nothing else, save a little morphine, when the pain was very severe, and iodide of cadmium ointment to the enlarged glands. She has had no particular diet, and nothing special has been done for the cough or dyspnoea, save a little morphine and atropine at first, when the cough was very severe and irritating. Now, Dr. Da Costa thinks that the blood is clotting in the sac of this aneurism, and if this process goes on there will be a complete cure. You will seldom see a cure where the benefit to be derived from the iodide of potassium is so very marked. Dr. Da Costa thinks that the only treatment really worth anything is that by the use of *full* doses of iodide of potassium and a moderate diet, rather under- than over-feeding the patient, and absolute rest in bed. This latter injunction is very important, for we would not have had such good results in this case if the patient had been allowed to be up and about.

REMARKABLE TENACITY OF LIFE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—A most remarkable case, showing the tenacity of human life, has occurred in my practice, an account of which may, perhaps, benefit the profession.

On the morning of the 16th of March I was summoned as coroner to the inquest of a child in the vault of the water-closet adjacent to one of the hotels of this town. It had been there on the frozen excrement about two hours. It had been thrown forcibly by the mother down the hole, and then pushed out of sight under the flow with a broom-handle, so that nothing but the hand and wrist were to be seen. With a pair of blacksmith's tongs the hand was grasped and the child removed. It was pale, cadaveric, cold, motionless, with about one foot of cord attached to the umbilicus. I called for a bucket of hot water and immersed the child, also using artificial respiration. After a few minutes noticed a

gasps. I removed the child to a warm room in the hotel, and used friction, artificial respiration, and immersions in hot water alternately, and in about an hour the body was fully restored to life, a fine boy of nine pounds, and perfect with the exception of an abrasion on the back and the contusion of the hand made by the tongs in extrication from the vault. As soon as life began to manifest itself blood began to ooze from the cord, which I tied properly.

The mother after her delivery, which occurred on the floor of the water-closet, cleaned up the floor with a mop and went to bed, stating she was sick. She was removed to a home over a half-mile distant, when the after-birth came of its own power. I hunted her up in the afternoon, when the particulars were made known. The girl is 20 years old, unmarried, and will not take her offspring. Mother and child doing well at present.

GEORGE ROBERTS, M.D.

CREIGHTON, NEB.

VINUM COCÆ.

The *Fortschrift* of January 5, 1886, gives the following prescription for the wine of coca: Take 30 grammes of foliæ cocæ and moisten the same with diluted alcohol, and add 1 litre of wine (Muscat, sherry, or Malaga). A better and quicker way is, if instead of the coca-leaves the corresponding quantity of the fluid extract—*i.e.*, 30 grammes pro litre of wine—is taken.

QUININE IN CHRONIC DYSENTERY.

The following case, reported to us by DR. CHEVES BEVILL, of Winfield, Ark., may be of interest to some of our readers:

R. P., aged 55, a very stout man, had typhoid fever some ten years ago, and has suffered ever since, more or less, with his bowels, and especially for the last three years, from severe chronic dysentery, with griping and bloody stools. He had been treated by five or six physicians, and no one seemed to do any good. The different astringents, such as acetate of lead, sulphate of zinc, sulphuric acid, creasote, nux vomica, opium, and pernitrate of iron were employed. Fluid extract of ergot and paregoric did him a great deal of good for two or three months, while using it, but it failed at last, and he was getting into such a state that there seemed no chance for him to live much longer. At

this time he began to have chills and fever, and Dr. Bevill was called to see him. He was extremely weak. Quinine was given in large doses, and morphine sul., gr. $\frac{3}{8}$ to $\frac{1}{4}$ with the dose, to ease the griping pains. He was kept on this treatment for three or four weeks. This was in September and October last; and since the 10th of October he has had only two bloody stools. He lives in a malarious region, but had no chills until September last for years. He now is healthy, can eat anything he wants. Dr. Bevill is sure it was the quinine that cured him. If some, or any, of our readers know of such cases being benefited by such treatment, it is to be hoped they will report them.

*CHILDBIRTH DURING AN ATTACK OF
SMALLPOX. THE INFANT NOT
INFECTED.*

DR. R. J. BANNING writes to the *British Med. Journ.*, February 20, 1886, an account of a case in which a woman, during the height of a tolerably severe attack of confluent smallpox, gave birth to an infant perfectly uninfected. The baby was vaccinated within a few hours after birth and successfully, both mother and child doing well. This fact is not in accordance with the general opinion that a child born during a developed attack of smallpox in the mother must necessarily be infected.

ON THE TOXIC NATURE OF IVY.

DR. AL. JANDOUIS having learned of several fatal accidents produced in children by the eating of berries of *hedera helix*, the ordinary ivy, examined this plant, and records his results in the *Deutsche Medicinische Wochenschrift* of February 8, 1886. Pliny long ago spoke of its toxic nature, and Matthiolus praised its emmenagogue virtues.

The berries were found to contain sixty per cent. of pulp and forty per cent. of semen. The former consists of a dark red pigment colored green by ammonia and hydrochloric acid, of grape-sugar, gum, and a resin, which constitutes an amorphous green-yellowish powder, having at first a sweetish, then a sharp, pungent taste; there exist also albumen, fibrin, water, and mineral matters in the pulp. The semen consists of a fatty oil, albuminous matters, and a peculiar substance of an acrid and astringent taste, almost insoluble in water, mineral matters, and water. Of all these constituents the resin in the pulp

and the astringent substance of the seed can alone be regarded as poisonous elements, and to their combined action the toxic character of ivy is to be attributed.

PYRIDIN IN ASTHMA.

DR. JOSEPH S. NEFF (*New York Med. Journ.*, March 13, 1886) has followed the example set by Sée, already published in the columns of the GAZETTE, in treating asthma by inhalations of pyridin. Dr. Neff used from one-half to one drachm poured upon a saucer placed in one end of a small room, with doors and windows closed, or, what is better still, a large closet, and allowed patients sitting a little distance from it to inhale vapors mixed with the air. The absorption is immediate, the drug being detected in the urine in a few moments.

Upon the healthy adult, as shown in himself, assistants, and nurses, there was almost universally a flushing of the face, with quickening of the pulse and respiration, the latter lasting but a few moments, the former from fifteen minutes to ten hours, depending largely upon the length of time of inhalation. In several instances temporal headache of a slight character persisted for several hours; at times a peculiar full sensation approaching giddiness is experienced.

The fact that in the healthy the pulse and respiration are quickened for a few minutes does not hold good in asthmatic patients, for, almost without exception, the heart's action, which previously may have been accelerated, slowly falls to the normal, without change in character or rhythm; and less rapidly the respirations, which become slower, easier, and more full, the intense longing for air disappearing, with diminution of the oppression.

In most cases there is a desire to sleep, which in some becomes irresistible; this resembles, however, normal sleep, from which patients are easily aroused, and without insensibility or loss of intelligence, thus distinguishing it from the sleep produced by narcotics and anæsthetics, although there is a slight loss of muscular reflex action.

Dr. Neff used this preparation many times in a series of twelve cases of asthma. The following represents a summary of his results:

Four were females, eight were males; the ages ranged from twenty-six to sixty-five, divided as follows:

Nervous pulmonary asthma, three. No return of attacks in any.

Cardiac asthma, three. All were relieved of attacks. One remained under observation three months, and one for two weeks only.

Bronchial asthma, three. In one there was no return during ten weeks' stay in the hospital. The two others were relieved of their attacks and insisted upon their discharge, being under treatment less than three weeks.

Asthma in advanced phthisis, two. In one there was but slight relief during the paroxysm; in the other there was absolutely no benefit.

Asthma as a complication of gout, one. No return in a month. Albuminuria from interstitial nephritis was present.

Of the fourteen cases reported by Sée, four were in females, ten in males, from thirty to sixty-eight years of age. Nine were what he terms "pure asthma," all of which were more or less relieved, and five cases of cardiac asthma.

In one case of twelve years' duration pyridin caused nausea and vertigo after eight days of treatment, which necessitated its discontinuance, although great relief was obtained. Nausea Dr. Neff has not seen; vertigo but once.

In one or two cases where the expectoration had been purulent it lost that character after the inhalation.

All unpleasant symptoms seem to be confined to cases with long-standing emphysema, or valvular or degenerative heart-disease, with small, irregular pulse. In young, robust people with "simple" pulmonary asthma there seems to be drowsiness alone.

The beneficial results obtained from this remedy seem to be from its action on the sympathetic and the medulla.

Any depressing effects on the heart would seem due rather to the interference with the pulmonary functions, death being caused, in the lower animals at least, by paralysis of the respiratory centres.

Pyridin is not to be classed as a curative agent. Most likely its greatest value will be seen in cases of simple or nervous pulmonary asthma, when the iodine preparations cannot be borne, or nitro-glycerin and sodium nitrite are contraindicated. Although in the bronchial or catarrhal forms of the disease the relief of the paroxysms has been marked in ninety per cent. of the cases treated, of the remaining number nearly all had emphysema of long standing.

In asthma occurring in advanced phthisis the drug should be given with care on account of the small amount of lung-tissue left unaf-

fected, especially where there is a great degree of consolidation with fibroid induration, when, perchance, the spasm may be relieved, but few air-vesicles remain in condition to respond. Here at least morphine will hardly be superseded.

In phthisis the recurring dyspnoea and orthopnoea are relieved during the period of inhalation only, returning in a few moments, and at times with increased violence.

With so little experience, this drug must be administered with a certain degree of caution until its action is thoroughly understood, severe or persistent headache, nausea, vomiting, and vertigo acting as danger-signals, warning us to proceed with care.

THE VITALITY OF CHOLERA BACILLI.

GUTTMANN and NEUMANN publish in the *Centralblatt für die Med. Wiss.* of February 13, 1886, some of their observations made on the vitality of cholera bacilli. They found the vital duration of these pathogenetic microbes relatively very high. Bacilli cultured on "agar-agar" were, after the expiration of two hundred and nineteen days, found still living, and capable of propagation, and those planted on peptone-gelatin showed equal signs of life after two hundred and nineteen days. From the former it was even possible to secure pure cultures capable of causing infection.

ARTIFICIAL MILK.

It is a curious fact that when a fat is boiled with caustic potash in the relation of fifty parts of alkali to one hundred parts of fat, it is gradually dissolved: the glycerin, however, is not set free. If the alkaline solution is now acidified, the original fat will be regained; but it will have new properties. It is now soluble in alcohol, and when added to ordinary fats, even in very small amounts, it imparts to them the property of forming complete emulsions with extraordinary dilute solutions of the alkaline carbonates. In order to make a liquid which shall possess the appearance and the most important chemical properties of milk, Chichkoff proceeds as follows. Some of the modified fat is added to ordinary fat, and the mixture emulsified with a dilute solution of potassium or sodium carbonate. Calcium and magnesium phosphates are then added in the form of powders, and also a certain amount of casein which has been rubbed up with a little ammonia. Another

solution is now made by dissolving milk-sugar in dilute hydrochloric acid and adding a solution of albumen. The two liquids are now cautiously mixed, the acid liquid being poured into the alkaline one, and the mixture well stirred after each addition. This artificial milk does not contain the ferment occurring in natural milk, but if a little sour milk is added to it, a thick layer of cream soon rises which possesses all the properties of real cream and can be worked into butter. The artificial milk also curdles and forms whey. The taste of the milk, however, is not quite as palatable as it might be; but this may be improved by further experimenting. This peculiar power of the modified fat to form emulsions may be of use in pharmacy.—*Druggists Circular*.

A NEW NARCOTIC AND MYDRIATIC.

According to a note appearing in the *Deutsche Med. Wochenschrift* of February 8, 1886, PETIT, of Paris, examined the rind of *Bowdichia major* (*sehipira major*), which, in Brazil, is used by the natives as a febrifuge, and found it to contain an alkaloid, which, in doses of $\frac{1}{4}$ -grain in frogs and in 1-grain doses in guinea-pigs, showed distinct narcotic properties. In the latter animals the alkaloid causes also convulsions. Besides being a narcotic the drug evinced also powerful mydriatic properties.

ON THE POSITION IN NUTRITION OF THE VARIOUS CLASSES OF FOOD-STUFFS.

In no department of science, perhaps, has more energy been shown than in the inquiry as to the part played by the various classes of food-stuffs in the animal economy. Nowhere has the evolution of ideas and theories followed more rapidly its course, thanks to the indefatigable zeal of the workers in this branch. Liebig was one of those who did much to place the subject on a scientific basis, and by the contribution of carefully ascertained facts to give the whole research a stimulus to which we are largely indebted for the progress accomplished. We have had to modify, it is true, his views on the correlation of exercise and the excretion of urea; and the altered views materially influence the theory of nutrition. The opinion formerly entertained that urea represented the wear and tear of the tissues of the body, and therefore bore a constant relation to the work done by them, has to be abandoned. The

albuminoid constituents of the tissues are in such a condition of stability, that they do not themselves readily undergo metabolism in conditions of health; and it is only under the influence of an acceleration of metabolism on the one hand, or a diminished supply of albuminoids on the other, that they are decomposed. That portion of the albuminoid constituents of the food which circulates with the blood is more easily split up; and, as the activity of the cellular elements in effecting these changes is to some extent dependent on the amount of this "circulating albumen," so the excretion of urea will correspond to some extent to the amount of nitrogenous material taken in with the food. There is, however, for every individual a limit to the activity of his cellular elements, and if this be surpassed, metabolism will be diminished and oxidation only imperfectly performed. Hence a liberal nitrogenous diet does not, of itself, tend to an increase of body-weight or strength.

Contrary to the behavior of the albumens in the organism, the extent of fatty metabolism is independent of the ingestion of fat, but is markedly affected by the amount of work performed by the organism, and by the maintenance of bodily heat. The material effects of albumen and fat in the system are in a certain sense opposed, for the former increases the tissue-waste, and secondarily the oxidation, while fat induces the opposite effects. This action of fat is of special importance, when we have to consider how best to attain an increase of the constituents of the body. With an exclusive supply of albumen, only very small quantities of this substance can ever be retained in the body; for each accession of albumen to the food gives rise to an increase of waste, until, after a few days, the balance between income and expenditure is again established. With a simultaneous administration of albumen and fat a less amount of albumen is on this account necessary to meet the material wants of the organism, and if it be present in excess the metabolic processes do not attain the same proportions as with a diet consisting exclusively of albumen, so that a larger proportion of the excess remains undecomposed in the body and adds to its weight. The fat stored in the body acts in like manner with the fat contained in the food, since it likewise lessens the waste of tissue and secondarily the oxidation. This is the reason why corpulent individuals frequently continue to gain in bulk, although they are not in the habit of indulging immoderately in food. The action of carbohydrates

resembles that of fat in protecting from metabolism a certain amount of the circulating albumen; and if given in excess they will, in consequence of the greater facility with which they undergo metabolism, lead to the more hardly metabolizable fat being left unchanged and deposited in the tissues. From this we may conclude that the generally assumed transformation of carbohydrates into fat does not take place.

As already stated, an increase in the nitrogenous substances in the blood leads to increased metabolism, and at the same time the amount of "circulating albumen" is augmented. This explains why a highly-fed animal can better withstand privation than one more poorly nourished, since it is only after several days that the stock of circulating albumen will become exhausted, and the organism is forced to draw on its own tissues for nitrogenous material. Let us take an animal fed on a quantity of albuminoids insufficient for its needs, it will then have to draw upon its own tissues to make up the deficiency. If some fat be added, a part of the albumen is economized, and the amount of nitrogenous waste, as shown by the urea excreted, is lessened; so that in a well-fed animal starvation provokes a diminution, but in a poorly-fed animal an augmentation of nitrogenous metabolism. Similarly alcohol, in consequence of its metabolism and of its fat-sparing action, behaves in the character of a food. The main value of stimulants is, however, more in the direction of slowing metabolism and so lessening waste, than from any nutritive qualities which they may possess. Most of them, moreover, have an influence on the process of digestion which in certain cases may, by rendering it slower, conduce to more perfect assimilation.—*British Medical Journal*, February 13, 1886.

TWENTY-NINE CASES OF TRACHEOTOMY OF A PRIVATE PRACTITIONER.

BUCHHOLTZ, in a recent inaugural essay (Berlin, December, 1885, Niethe, p. 28), reports the results of twenty-nine cases of tracheotomy performed in private practice against croup and diphtheria. The number of lives saved out of these twenty-nine was twelve. This is a very good showing, and a welcome communication from the usually rather neglected statistics of the private practice in a small town (Kottbus, Prussia). We have here another proof that even under the most unfavorable circumstances the results of

tracheotomy are more favorable in the private house than in the hospital.

TUMBEKI: A PERSIAN NARCOTIC.

In the consular reports from Trebizond, for some years past, mention has been made of a vegetable product, "tumbeki," occurring in the same list as tobacco, and evidently an article of regular commerce between Persia and Turkey. Quite recently also, in an interesting article in *Harper's Magazine* on "The Domestic and Court Customs of Persia," tumbeki is referred to as a species of tobacco in high repute in Persia, which, owing to its remarkable narcotic properties, is always smoked in a water-pipe. In order to obtain more definite information with regard to tumbeki, and the importance of its narcotic and possible medicinal properties, Mr. E. M. Holmes, the curator of the Museum of the Pharmaceutical Society, has entered into correspondence with consular and other authorities upon the subject; and the results were embodied in a communication made at an evening meeting of the Pharmaceutical Society on Wednesday, February 10. Mr. Holmes found the authorities somewhat at variance as to whether tumbeki is the product of *Nicotiana rustica* or *N. persica*; but leaves, which he received as tumbeki from Trebizond and Constantinople, both correspond in character with *N. persica*, the stem-leaves of which are sessile, whilst *N. rustica* has stalked cordate leaves. It appears, further, that there are three qualities of tumbeki,—the Shiraz, Kechan, and Teheran,—all derived from the same plant, though the value of the first is double that of the last two. In order to test the accuracy of the statement that tumbeki contains more nicotine than tobacco-leaves (*N. tabacum*), portions of four samples were submitted to analysis by Messrs. Eastes and Ince. After trying various processes for the estimation of the nicotine, they arrived at the conclusion that the most reliable method consisted in preparing an extract of the leaves with dilute sulphuric acid, removing albuminous matters from the extract, and precipitating the alkaloid with a standard solution of Mayer's reagent (a mixture of mercuric chloride and potassic iodide). By this method, they obtained results corresponding to the following average percentages of nicotine: Shiraz, 5.835 per cent.; Ispahan, 5.4945 per cent.; Hidjaz, 2.046 per cent.; and Kechan, 2.90925 per cent. In further analysis of the leaves, the authors found the extractive matter to range from forty per cent. in the Kechan

to fifty-five per cent. in the Shiraz sample; the saccharine matter to be highest in the Kechan sample, whilst the ash was about twenty-five per cent. in all the samples.—*British Med. Journ.*, February 27, 1886.

A SPECIMEN OF A GERMAN MIXTURE.

The balsam de Bori, up to rather recent times not infrequently prescribed by heroic German physicians, is truly a little pharmacopœia by itself, and unquestionably also a good thing—for the apothecary. The prescription for the balsam reads as follows:

R Tinct. angelic.,
Tinct. aloes,
Tinct. myrrhæ,
Tinct. benz., aa ℥vii;
Ol. lavendulæ, gtt. ii;
Bals. Peruv., ℥iii;
Stor. calam.,
Olib. pulv., aa ℥i.

Fiat mistura, digere secundum artem et filtra.—Bon appetit!

VESICATING INSECTS.

The wings of vesicating insects possess a singular softness of the elytra and the integument, differing from that of other insect tribes. The explanation of this fact is found in the histological, and not on the chemical, characters of the wing, as was at one time supposed. Between the two layers, which are connected at their edges by chitin, there is a considerable space, and the two layers are connected by chitinous pillars, which, although thin and delicate, form substantial supports. In most other insects the chitinous layers are much thicker, the pillars more numerous, and the spaces are almost obliterated. The peculiarities noted have, it is believed, much to do with the irritation produced by minute particles of wings when applied to the skin of human beings.—*Medical Press*, January 13, 1886.

THE MEDICAL USE OF SACCHARINE.

At the meeting of the Manchester Medical Society, held February, 1886, Dr. DRESCHFELD (*Brit. Med. Journ.*, March 13, 1886) showed some preparations, and spoke of the therapeutic uses of this new sweet compound (benzoic sulphinide, or anhydro-ortho-sulphamin benzoic acid) obtained from coal-tar. This body was prepared by Dr. Fahlberg, of New York, and its physiological properties had been recently studied by Stutzer and

Mosso. Saccharine was a white powder, of acid reaction, soluble in 500 parts of distilled water, and a little more soluble in alcohol and ether. It was intensely sweet, and a dilution of 1 in 10,000 had still a very sweet taste, very much like that of sugar, together with a peculiar by-taste like bitter almonds (solution of sugar lost its sweetness in a dilution of 1 in 250). Saccharine, when given internally or subcutaneously, was exuded completely by the urine in an unaltered state; it was, therefore, not decomposed in the body. Neither the saliva nor the fæces contained any traces, even after large doses. It had scarcely any retarding effect on the digestion of either proteids or hydrocarbons; in fact, given in small quantities, it increased the diastatic action of malt in the presence of sugar. It had no injurious effect if given even in large quantities (2 to 5 grammes) in man, and produced no appreciable alteration in the appetite. The urine showed no alteration during its administration either in specific gravity or quantity. The urea and sulphuric acid in the urine did not show any changes. The urine had, however, an intensely sweet taste, and did not undergo fermentation readily. Saccharine was slightly antiseptic. Beyond being a substitute for sugar, it possessed no therapeutic properties, except that, in two cases of acid dyspepsia, it relieved some of the troublesome symptoms. Its use was indicated in diabetes and obesity. In diabetic patients, it had no effect either on the quantity of urine or on the amount of sugar passed.

A CASE OF POISONING WITH STEINER'S VERMIN-KILLER.

At the seventh meeting of the Medico-Chirurgical Society of Edinburgh for this year, Dr. ALLAN GRAY read a paper on "A Case of Strychnine-Poisoning, with an Analysis of Steiner's Vermin-Killer." In the case on which the communication was based there was a remarkable delay of the fatal result for three or four hours. The patient was alcoholic, and had been imbibing freely previous to the suicidal act, which consisted in the swallowing of the contents of a packet of Steiner's vermin-killer. Dr. Gray thought that possibly the presence of the alcohol was sufficient explanation of the slow advance of the symptoms. He then explained the method of analysis followed, laying stress on the sulphuric acid and bichromate of potassium test for strychnine. Appended to the paper

was a comparative analysis of the different vermin-killers.

DR. FOULIS showed scrapings from a wall-paper containing a large proportion of arsenic, and dwelt on the great danger accruing to the too easy possibility of obtaining such poisons. Some discussion followed as to the cause of the delay in the fatal result.

DR. PHILIP asked if Dr. Gray was prepared to place implicit confidence in the sulphuric acid and bichromate of potassium test for strychnine, and if the purely chemical tests should not always be supplemented by the physiological. He referred to a curious case, where the first verdict of poisoning by strychnine had been overthrown through the absence of the evidence afforded by these latter.

DR. GRAY thought the chemical tests often failed through the fault of the chemist.—*Medical Press*, March 10, 1886.

THE INTERNAL ADMINISTRATION OF ANTISEPTICS.

The administration of antiseptic drugs, either as prophylactics or as remedies, has been frequently resorted to in the treatment of infective diseases, but not hitherto with an amount of success which has encouraged the profession at large to adopt the method. Some experiments, however, which Dr. Theodore Cash is now conducting for the Local Government Board, appear to justify the hope that this line of treatment may eventually be useful. In a communication recently made to the Physiological Society, he stated that he had been led to test the influence of perchloride of mercury, because it was retained in the body for some days after its administration had ceased, and because it was still a powerful germicide even when very greatly diluted. He found, in an experiment on a rabbit, that, after a quantity of perchloride of mercury, equal to about 8 milligrammes per kilogramme of body-weight, had been injected hypodermically, in divided and highly diluted doses in the course of seven days, the animal only suffered a passing disorder after inoculation with a virus of anthrax which killed another rabbit in forty-four hours. The animal, moreover, was found to be protected against further inoculations with virulent anthrax. A smaller dose (equal to about 5 milligrammes per kilogramme of body-weight) was found to delay, but not to prevent, the onset of the disease. The number of bacilli found in the blood after death in such a case

was very small, but it was found that their virulence had not been diminished, the blood of the animal producing an unmitigated and unmodified attack of anthrax in other animals.—*British Med. Journ.*, February 13, 1886.

THE PRESERVATION OF SALICYLATE OF SODIUM.

Salicylate of sodium belongs to the class of preparations which undergo change in time. If salicylate of sodium, either in crystals or in powder, is exposed in a glass vessel to the light, in four to six weeks the exposed portions become darker, and lose their faintly acid reaction, and when dissolved form a dark solution, while the portions protected from light remain colorless, and retain an acid reaction. Salicylate of sodium is also particularly susceptible to the action of moisture. Salicylate of sodium perfectly dry and kept in glass away from the light remains unaltered, while another portion kept in paper at the same temperature soon becomes useless, lumpy, and gray. It seems, therefore, necessary to protect salicylate of sodium from light and moisture. It has also been noticed that the character of the water in which the solution has been made is of influence in the permanence of the solution. When spring water is used, a solution of salicylate of sodium will become brown in a few hours, while it remains colorless when distilled water is used.—*Pharm. Centralhalle*, January 7, 1886.

CONVULSIONS IN AN INFANT CURED BY MORPHINE.

DR. H. PLUMMER, of Harrodsburg, Ky., reports in the *Medical Record* for March 27, 1886, the case of an infant, 22 months old, who was seized after a short period of malaise with convulsions. She was seen after the second convulsion, and did not then appear to be very ill, but was fretful. The temperature was 102° and there was some little cough, but there were no signs of pneumonic trouble. Bromide of potassium in 5-grain doses was given every hour, but the convulsions increased in severity and frequency. The bowels had been moved by calomel and castor oil. In the afternoon of the second day the child was in the following condition: The tongue was protruded between the teeth, swollen, and constantly in motion; the forearms were flexed and rigid, the thumbs being firmly drawn into the palms, and the lower

extremities were likewise rigid. The child was now unable to swallow, and the pupils were widely dilated. The convulsive attacks recurred at such short intervals that they seemed to be continuous. Other remedies having proved ineffectual, Dr. Plummer determined to employ morphine, and accordingly gave $\frac{1}{6}$ grain hypodermically. In a few minutes the little patient fell into a sleep, in which she remained, awaking only to drink, for twenty hours. The pupils became of nearly the normal size, and the muscular system became relaxed. From this time she continued to improve, although she seemed nervous and fretful for a time, and the convulsions did not return.

A NEW METHOD OF KEEPING PERFORATION OF THE MEMBRANA TYMPANI OPEN.

DR. McKEOWN (Belfast), at a recent meeting of the Academy of Medicine in Ireland, described a method of making an artificial perforation of the membrana tympani, which would remain open for a period varying from two weeks to two months (*Medical Press*, March 10, 1886). He made a triangular flap of the membrane, commonly selecting either that part in front of or that behind the handle of the malleus. He used a speculum, and illuminated the membrane by the frontal mirror. He then introduced the knife,—a very fine straight knife with thin handle,—punctured the membrane in front of or behind top of handle of malleus, cut upwards as far as he could; then he made a second incision, beginning below, either at anterior or posterior part of membrane, as the case might be, and in a horizontal line with lower end of first incision, and cut upward until the two incisions joined. The flap thus formed, unless in case of very thickened membrane, fell down, or might be turned down with a fine probe, and commonly remained in position, adhering to the membrane below by blood exuded from the cut surface. He had operated on a considerable number of cases, some of long standing, and he gave particulars of some of the most interesting. The ordinary incisions hitherto practised, except to discharge products of inflammation, were of no therapeutic use whatever. The operation proposed was not for the purpose of making an artificial way for the waves of sound, but to give rest to the ear for a long period, and to induce a nervous and vascular equilibrium favorable to the absorption of

deposits and restoration of function. Most troublesome obstructions of Eustachian tubes of long standing had given way to this treatment alone. As to relief of tension in old cases, a simple incision, closing in a day or two, could do no good, but an opening for a period of two weeks to two months might do a great deal. Time was the very essence of the question from a therapeutic point of view. He illustrated the use of the method in diagnosis, and also in opening a way for efficient treatment of some cases of hypertrophic change of the lining of the middle ear. So far as he could follow his cases he found none were made worse, some were not benefited, but the majority were relieved in a greater or less degree, some to a remarkable extent. According to authorities, after certain operations on the middle ear a relapse or even an aggravation followed; but after this method, in which the fundamental points were a large opening, no destruction of tissue, and the avoidance, as a rule, of all irritation, the improvement had been found sometimes to become even greater after the perforation had closed for some time.

THE MODE OF ADMINISTRATION OF SPARTEINE.

We have already published abstracts of the papers of various authors as to the use and physiological action of this new cardiac remedy. M. HOUE publishes the two following formulæ in the *Journ. de Med.*, January, 1886, for the administration of this drug: Sulphate of sparteine, $7\frac{1}{2}$ grains; milk-sugar, 75 grains; simple syrup, q.s. M. Div. in pill No. 50. S.—Two to ten of these pills may be given daily, according to indications; each pill contains $\frac{1}{100}$ grain. Or, sulphate of sparteine, $4\frac{1}{2}$ grains; distilled water, 32 minims; syrup of bitter orange-peel, 10 ounces. M. S.—Three teaspoonfuls of this syrup are about equivalent to two of the pills made under the preceding formula.

VIBURNUM PRUNIFLORUM IN ABORTION.

DR. W. MACFIE CAMPBELL states in the *Brit. Med. Journ.*, February 27, 1886, that he has had an opportunity of testing the use of viburnum pruniflorum in several cases of habitual miscarriage, and can entirely endorse the good opinion which is generally held as to its value; and he reports six cases in five of which the administration of 3 grains of the solid extract three times a day served to prevent threatened miscarriage.

— THE — Therapeutic Gazette.

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Original Communications.

THE PHYSIOLOGICAL AND THERAPEUTIC ACTION OF HYDRASTINE.

BY THOS. J. MAYS, M.D.

HYDRASTIS CANADENSIS, or golden seal, as it is commonly called, has been long and favorably known and used by the eclectic practitioners of this country. It is claimed by them, and with good reason too, that it exerts a powerful tonic influence upon the mucous surface of the alimentary canal, nasal passages, etc., when administered internally, and externally it has proven itself an

excellent remedy in chronic mucous inflammations of the eye, mouth, bladder, etc.

In 1851, Mr. A. B. Durand discovered a powerful alkaloid in the plant, which was further investigated by Mr. F. Mahla, of Chicago, and which is now called hydrastine. Dr. King,* the ablest exponent of that school of medicine, attributes the therapeutic action of the plant to this alkaloid. The latter has recently received a good deal of attention from various experimental physiologists, with the desirable result of placing its action on a very intelligent basis. Thus, Slavatsinski ("Ueber die Pharmakologische Wirkung des Hydrastins," *Med. Obosrenje*, November 16,

* American Dispensatory, p. 432.

1884, p. 346) found that the subcutaneous injection of 1 to 2 mg. produces disturbance of co-ordination, diminution of reflex action and of the pulse, and acceleration of respiration in the frog. In doses from 6 to 10 mg. it gave rise to transient spasm, complete paralysis, and diastolic arrest of the heart. The irritability of the motor nerves was enhanced, while that of the sensory nerves was depressed. In mammals he saw no alteration in the blood-pressure.

Dr. Fellner (*Centralblatt für die Med. Wissenschaften*, November 24, 1884, p. 417) details in a condensed form the physiological results which he obtained from the subcutaneous injection of the fluid extract of *hydrastis canadensis*. All the experiments were performed on curarized dogs, and the influence of the drug on the blood-vessels, the heart, the stomach, the small intestines, and the uterus was closely observed. He obtained the following results:

1. Large doses produced a transient rise in the blood-pressure, which was followed by a protracted depression of the same.

2. Medium doses are followed by the same phenomena, only in a less pronounced degree.

3. Small doses produce a very slight diminution of the blood-pressure, which is very soon succeeded by a permanent rise. Repeated injections of medium doses had the same effects as a single large dose, and repeated injections of small doses had the same influence as a single medium dose.

4. Division of the splanchnic nerves did not materially alter the above-described effects of small and medium doses, nor did compression of the abdominal aorta.

5. However, after division of the spinal cord in the neck, it produces no rise in the blood-pressure.

6. During the period when large doses exercise their depressing influence on the circulation, both strychnine and dyspnoea elevate the blood-pressure.

7. During the stage of lowered blood-pressure the alimentary canal becomes hyperæmic, while during the stage of elevated blood-pressure the same becomes pale and anæmic.

8. In the first stage of the action of large and medium doses considerable slowing and occasional cessation of the pulse occurs. Division of the vagi counteracts or entirely prevents this.

9. During the stage of heightened blood-pressure and general vascular contraction the whole uterus undergoes spontaneous contractions.

Dr. Bartholow (Lloyd's "Drugs and Medicines of North America," vol. i. page 156) ascertained that in frogs hydrastine produces stiffness, hyperæsthesia, convulsions, and diastolic arrest of the heart. The same phenomena were produced by it in the rabbit, in which he also observed a slight lowering of the blood-pressure. This author concludes from his experiments that the convulsions are spinal, that it exhausts the irritability of the motor nerves and muscles, and that chloral is probably a physiological antidote to it.

I think the following *résumé* comprises the chief points in the above-given experiments on the action of hydrastine, viz.: That in small doses it elevates and in large doses depresses the blood-pressure; that in small doses it produces contraction and in large doses dilatation of the vascular walls; that through the period of elevated blood-pressure it inhibits cardiac action; that in small doses it produces anæmia, and in large doses hyperæmia of the alimentary surface; that it induces uterine contractions; that it enhances the irritability of the motor and depresses that of the sensory nerves; and that it exercises its control over all these organs through a central and not through a peripheral influence.

While all these experiments cover valuable ground and bring out very clearly various phases of the physiological action of this alkaloid, it seemed very important to develop more definitely whether it acts chiefly on the sensory or on the motor nerves, and with this end in view the following experiments were instituted during June and July, 1885:

Experiment 1.—To test the action of hydrastine hydrochlorate on the reflex frog when locally applied, by immersing the right leg at intervals in a three per cent. solution, and by comparing the minimum reflex irritability of both legs by connecting them with a secondary coil of an induction apparatus by means of a commutator.

A.M.		Left foot.	Right foot.
10.15.	Minimum reflex irritability before immersion.....	10	10
	Immersion of right leg from 10.18 to 10.22.		
10.22		10	9
	Immersion of right leg from 10.27 to 10.30.		
10.30.....		10	8.5
10.35 to 10.36.	Immersion of right leg.		
10.36.....		10	8.0
10.38.	General spasm of posterior extremities on minimum stimulation.		

A.M.	Left foot.	Right foot.
10.44. Spasms spontaneous, as well as being easily induced by touch. Hyperæsthesia in left leg and whole body.		
10.46. General spasm induced more easily by touching left than right foot.		
10.55. Spasms induced.....	12	6
10.57. Spasms induced.....	10	6
10.58. Spasms can hardly be induced by even striking right foot, but are provoked by a mere touch of left foot.		
10.59. Spasms induced.....	9	6
11.00. Spasms more readily provoked by touching front than hind legs.		
11.05. Spasms induced.....	8	5
11.10. Spasms induced.....	8	4
11.12. Spasms induced in left leg at	7	No response at o
11.14. No spasms induced in either leg at o.		

Experiment 2.—To test whether the above-shown interference with reflex sensibility is due to a central or peripheral influence. The blood-vessels of the right leg were ligated in the region of the thigh, in order to obviate the general absorption of hydrastine. The right leg was immersed in a one and a half per cent. solution of the salt, and its minimum reflex irritability tested and compared with the opposite leg for some time, after which the left leg was immersed and the effects watched. Reflex frog large. Brain pithed at 5.15 P.M.

A.M.	Left foot.	Right foot.
6.20. Minimum reflex irritability before immersion.....	12	15
6.23 to 6.26. Immersion of right leg.		
6.27.....	12	11
6.30.....	12	11
6.31 to 6.33. Immersion of right leg.		
6.33.....	12	11
6.34 to 6.36. Immersion of right leg.		
6.37.....	12	10.5
6.42.....	12	11
6.44 to 6.48. Immersion of right leg.		
6.48.....	14	12
6.50 to 6.55. Immersion of right leg.		
6.55.....	14	12
6.56 to 7.06. Immersion of right leg.		
7.06.....	14	10.5
7.12 to 7.15. Immersion of left leg.		
7.15.....	12	10.5
7.17 to 7.20. Immersion of left leg.		
7.20.....	12	10.5
7.22 to 7.25. Immersion of left leg.		
7.25.....	11.5	10.5
7.28.....	11.0	10.5
7.30. General spasm on touching.		
7.32 to 7.35. Immersion of left leg.		
7.35.....	10.5	10.0

A.M.	Left foot.	Right foot.
7.42.....	10.0	9
7.43. The slightest touch of the right or ligated leg is sufficient to call forth a spasm, while a number of sharp taps on the left are required to induce the same.		
7.44. Minimum reflex irritability....	9.5	9.5
9.46. Minimum reflex irritability....	9.5	8.5
8.10. No blow or tap, however forcible, on either foot will serve to call forth a spasm. Striking the anterior extremities will quickly induce one.		

This experiment undoubtedly shows that a reduction of sensibility is brought about by a local peripheral action of hydrastine; but that it exerts this influence much more readily and effectively if it is absorbed, and thus allowed to come in direct contact with the spinal centres of sensation.

Experiment 3.—To test the action of hydrastine on the reflex sensibility of the frog, when introduced subcutaneously in small doses. Blood-vessels of right leg ligated in region of thigh. Reflex frog small, and prepared at 7.00 P.M.

P.M.	Left foot.	Right foot.
Minimum reflex irritability before injection.....	14	12
8.00. Injected 1 c.c. of one per cent. solution (1 mg., or $\frac{1}{14}$ gr.) in left back.		
8.05.....	14.5	13
8.08.....	13	12.5
8.11.....	12.5	13
8.14.....	11.5	13
8.17.....	11.0	13
8.20.....	10.5	12
8.23.....	10.5	12
8.26.....	10.0	12
8.27. Injected same dose in right back.		
8.29.....	9.0	9.0
8.31.....	7.0	9.0
8.34.....	No reflex at o.	7.0
8.36.....	No reflex at o.	5.0
8.38.....	Reflex gone in both at o.	
9.00. Minimum irritability of both sciatic nerves.....	0	50
9.05. Minimum irritability of both sciatic nerves.....	0	20
9.10. Minimum irritability of both sciatic nerves.....	0	15
9.12. Heart arrested in diastole.		

This experiment shows the same results as those which were yielded by Experiment 2, although brought out by a different method. It demonstrates that hydrastine exerts both a

peripheral and central anæsthesia. A number of other experiments have been made which demonstrate that hydrastine has a decided affinity for sensory nerves, and affects these before it does the motor nerves, and that it exerts a great deal of its influence through the spinal cord and not through the cranial centres; but, in view of the fact that its physiological action has been brought out so well by other observers, I do not deem it necessary to publish these. The results of my experiments on the frog may be summed up as follows:

1. That it produces paralysis in the early stage of poisoning, which is followed by convulsions.
2. That the convulsions are chiefly spinal in their nature.
3. That a stage of hyperæsthesia precedes that of convulsions.
4. That it depresses sensation or blunts sensibility when locally applied.
5. That it affects the posterior before the anterior extremities.
6. That it affects sensation before motion.
7. That it affects the sensory nerves principally from the centre to the periphery, and not *vice versa*.

On Man.—My friends Drs. Seiss and Stevenson kindly aided me in ascertaining its physiological action on the human body, at least in so far as its influence on the pulse and on local sensibility is concerned. It was tested both subcutaneously and *per os*,—five times by each method. A copy of the protocol of three experiments with the subcutaneous method reads as follows:

NO. 1.

- P.M.
- 8.44. Pulse 68.
- 8.55. Pulse 68.
- 9.00. Injected 6 minims of one per cent. solution of hydrastine (P. D. & Co.), $\frac{1}{8}$ grain, in left forearm directly below elbow.
- 9.05. Areola around seat of injection numb.
- 9.10. Pulse 72.
- 9.23. Pulse 72. Red blush around seat of injection.
- 9.25. Numbness over ulnar region of hand and little finger.
- 9.30. Pulse 68.
- 9.37. Pulse 66.
- 9.45. Pulse 64.
- 9.52. Whole arm below seat of injection benumbed to some extent.
- 9.54. Pulse 66.
- 10.00. Arm below seat of injection itching.
- 10.05. Pulse 60.
- 10.15. Pulse 64.
- 10.30. Pulse 60.
- 10.59. Pulse 60.

P.M.

- 11.00. Feels very well. No bad effects except a soreness around seat of injection. Sensation restored throughout the whole arm.
- 11.15. Pulse 60. Very full.

NO. 2.

P.M.

- 8.44. Pulse 76.
- 8.55. Pulse 76.
- 8.56. Injected 7 minims of one per cent. solution of hydrastine (P. D. & Co.), $\frac{1}{8}$ grain, in left forearm below elbow-joint.
- 9.05. Small area around seat of puncture perfectly numb. Can push a needle through skin in this neighborhood without producing any pain.
- 9.08. Pulse 76.
- 9.22. Pulse 74. Red blush around seat of injection, which is raised.
- 9.25. Numbness over ulnar region of hand.
- 9.35. Pulse 68.
- 9.45. Pulse 68.
- 9.50. Blush around injection disappearing, but still a little swelling.
- 9.52. Whole arm below seat of injection somewhat benumbed.
- 9.68. Pulse 65.
- 10.10. Pulse 65. Full.
- 10.24. Pulse 65.
- 10.35. Pulse 65.
- 10.54. Pulse 65.
- 10.59. Pulse 65. No bad effects, except pain around seat of injection. Sensation in arm restored.
- 11.15. Pulse 65.

NO. 3.

P.M.

- 8.44. Pulse 102. Not feeling well, on account of an ephemeral fever due to a slight cold.
- 8.57. Pulse 102.
- 9.02. Injected 6 minims of hydrastine (P. D. & Co.), $\frac{1}{8}$ grain in left forearm.
- 9.05. Raised areola around injection.
- 9.10. Pulse 100.
- 9.15. Pulse 92. Red blush around seat of injection.
- 9.25. Numbness over ulnar region of hand.
- 9.30. Pulse 92.
- 9.35. Pulse 86.
- 9.45. Pulse 80.
- 9.52. Whole arm below seat of injection somewhat blunted in sensibility.
- 9.55. Pulse 86.
- 10.00. Arm below seat of injection itching.
- 10.10. Pulse 84.
- 10.20. Pulse 86.
- 10.38. Pulse 82.
- 10.57. Pulse 80. Feel very much better than at beginning of experiment. Sensation in whole arm restored. Sore around seat of injection.
- 11.15. Pulse is full and strong, and 80 per minute.
- (In no instance was the irritation produced by the puncture of the needle prolonged over twenty-four or forty-eight hours.)

In the following cases it was taken by the mouth:

NO. IV.

P.M.
 8.05. Pulse 78. Two hours after supper.
 8.10. Pulse 78.
 8.15. Pulse 78. Took $2\frac{1}{2}$ grains hydrastine (P. D. & Co.).
 8.20. Tingling of tongue, as if benumbed.
 8.25. Pulse 78.
 8.35. Pulse 78.
 8.45. Pulse 78.
 8.55. Pulse 76.
 9.05. Pulse 76.
 9.15. Pulse 75.
 9.25. Pulse 75.
 9.35. Pulse 74.
 9.45. Pulse 72.
 9.55. Pulse 68.
 10.05. Pulse 70.
 10.15. Pulse 70.
 10.25. Pulse 70.
 10.35. Pulse 70.
 9.15 A.M. next morning. Pulse 80.

NO. 5.

P.M.
 8.05. Pulse 72.
 8.10. Pulse 72.
 8.15. Pulse 72. Took $1\frac{1}{2}$ grains hydrastine (P. D. & Co.).
 8.35. Pulse 74.
 8.45. Pulse 72.
 8.55. Pulse 72.
 9.05. Pulse 70.
 9.15. Pulse 72.
 9.45. Pulse 66.
 10.00. Pulse 68. Fuller.
 10.15. Pulse 68.
 10.20. Pulse 66.
 10.30. Pulse 66.

NO. 6.

P.M.
 2.20. Pulse 72.
 2.30. Pulse 72.
 2.35. Pulse 72. Took $\frac{1}{2}$ grain of hydrastine (P. D. & Co.).
 2.55. Pulse 72.
 3.10. Pulse 72.
 3.25. Pulse 70.
 3.35. Pulse 69.
 3.50. Pulse 68. Fuller.
 4.20. Pulse 68.
 4.22. Took 1 grain more.
 4.30. Tongue feels slightly numb at tip.
 4.50. Pulse 64.
 5.00. Pulse 64. Numbness on tongue gone.
 5.25. Pulse 61.
 5.50. Pulse 66.
 6.05. Pulse 68.

NO. 7.

P.M.
 2.25. Pulse 77. Dinner one and a half hours ago.
 2.40. Pulse 76.
 2.45. Pulse 76.
 2.50. Pulse 76. Took 1 grain of hydrastine (P. D. & Co.).

P.M.

3.05. Pulse 74. Tongue tingles like as if it had cocaine.
 3.30. Pulse 73.
 3.40. Pulse 71.
 4.00. Pulse 71.
 4.15. Pulse 69.
 4.45. Pulse 72.
 5.15. Pulse 65.
 5.35. Pulse 69.

NO. 8.

A.M.

9.30. Pulse 80. Took 2 grains hydrastine (P. D. & Co.).
 10.00. Pulse 70.
 11.00. Pulse 66.
 12.00. Pulse 64.
 12.30. Pulse 64.

Therapeutic Indications.—These experiments show that in the healthy organization it has a decided affinity for the circulation,—slows the heart, and in all probability elevates the blood-pressure, and also produces local anæsthesia, therefore confirming the experiments which have been made on the lower animals.

Its influence on the circulation in man is certainly pronounced enough to make itself sufficiently obvious; and, when this fact is coupled with the interesting observation of Dr. Fellner, already cited, that in the lower animals it constricts the capillary circulation to such an extent that it produces anæmia of the mucous surfaces in small doses, it should be a valuable agent in the treatment of all hyperæmic and catarrhal conditions of these organs. Especially is this assumption pertinent when we reflect that it has the power to counteract a relaxed capillary circulation, a condition which, in the great majority of instances, is associated with such hyperæmiæ.

Its anæsthetic action, which is not so striking as that of cocaine or brucine when locally applied, nor so evident as that of theine when subcutaneously introduced, is still remarkable for remaining unobserved so long in an agent which is one of the most popular remedies of the day. It has been used locally to soothe irritable surfaces for more than a quarter of a century, yet the credit of first perceiving its local anæsthetic effect on man in a clinical way belongs to Dr. Charles H. Burnett, Professor of Otology in the Philadelphia Polyclinic, who, but quite recently, called attention to this fact in a contribution to *The Polyclinic* for December, 1885, entitled "Hydrastis with Boric Acid in the Treatment of Otorrhœa."

Dr. Edward T. Jackson, while experimenting with a number of mydriatics a few months ago, was the first to notice that hydrastine dilates the pupil to some extent when applied locally.

Dr. William Rutherford, of Edinburgh, Scotland, in his work on "The Physiological Action of Drugs on the Secretion of the Bile," found hydrastis—a resinous substance prepared from the root of the plant by Keith & Co.—to be a moderately powerful stimulant of the liver.

From what has been said, I think it is evident that hydrastine, on account of the properties which it is shown to possess, is most applicable in catarrhal states of the stomach, bowels, eye, ear, nose, and throat, although it is also indicated in other diseased conditions. A familiar picture to the physician is a combination of the following symptoms: An uneasiness in the gastric region and some eructations after eating, impaired appetite, irregular bowels, coated tongue, bad breath, yellow-tinged conjunctiva, etc. This condition is very much benefited by the administration of hydrastine in $\frac{1}{8}$ to $\frac{1}{4}$ grain (Merck) doses before each meal.

The following is a case of gastric catarrh which was relieved by the fluid extract of hydrastis:

J. D. consulted me November 3, 1879, in regard to a pain and swelling in the region of his stomach. His bowels were regular, appetite tolerably good, except when he had pain. Occasionally vomits after a meal, which is always preceded by pain. Vomit very sour. Tongue clean at the tip, but coated at its root. Subject to this disorder for the last three years. Gave him 3 drops of fluid extract of hydrastis canadensis every three hours. Saw patient again November 8, when he felt very much better. Less pain and constriction in stomach, and no vomiting since. He gradually improved, and with the aid of iron and quinine was fully restored.

A similar disorder of the digestive organs is found as a sequel to intermittent fever. A derangement of the stomach and duodenum is one of the most constant concomitants of this disease, and there is little doubt that through its power of relieving this condition, and of stimulating the biliary secretion, hydrastine has earned the reputation of curing "fever and ague." Dr. Brunton, in his work on "Pharmacology, Therapeutics, and Materia Medica," very beautifully explains the rationale of the action of cholagogues in the

treatment of intermittent fever, by eliminating the malarial poison from the portal circulation, and thereby preventing its entrance into the general circulation. Therefore any drug which possesses the power of accelerating the flow of bile often effects a cure, without exercising any direct febrifuge property. A number of years ago I had the opportunity of testing the fluid extract of hydrastis canadensis in intermittent fever, but obtained no results sufficiently positive to warrant the belief that it has any antipyretic virtue.

In studying the action of hydrastine clinically it must always be borne in mind that experimentation shows it to have a powerful action on the spinal nervous system, and hence it should be a most valuable tonic to this portion of the body.

The following case of general enervation, resulting from alcoholic intemperance, is one in which the disorder was due probably to a semi-paralyzed condition of the spinal axis, and in which the beneficial action of hydrastine was well brought out.

CASE.—October 1, 1879. B. M. complains of extreme prostration, diarrhoea, irregular chills, fever, and complete loss of appetite. Very much addicted to alcohol. On examination I found a pulse of very low tension, 100 beats per minute, and pressure along and over the spinal column caused a good deal of pain. He received no benefit from quinine. On the 10th instant his condition was much the same as it was at the beginning of the attack, and the following is a typical sphygmogram of a number which were taken at that time:



From this time on he received 4 drops of the fluid extract of hydrastis canadensis every two hours in water. He began to mend immediately. His appetite improved, bowels became regular, the pain in the spine as well as the chills left him, and he felt better in every way. On the 25th of the same month his pulse was 76 per minute, and I obtained the following sphygmogram, which shows a marked improvement in his circulatory organs:



I think the change that occurred in this patient was principally confined to the vaso-

motor nervous system, and is a strong confirmation of the physiological action of hydrastine on the circulation, as brought out by Fellner in his experiments on animals, as well as by my own on man.

In a future paper I hope to develop more fully the practical aspect of hydrastine, and think I will then have clinical material to show that it is a valuable addition to our materia medica.

In conclusion, I will add that there are many spurious articles of the drug in the market, which are either principally composed of berberine, or contain too large an amount of the yellow coloring matter of the plant. Pure hydrastine is a white crystal, and the finest preparation to my knowledge is the hydrochlorate, manufactured by Merck, and which has been chiefly employed in working out the results of this paper.*

1716 CHESTNUT STREET, PHILADELPHIA.

HAMAMELIS VIRGINICA.

BY DRs. JOHN MARSHALL AND H. C. WOOD,
PHILADELPHIA.

THIRTY years ago every American housewife, at least every one in the neighborhood of Philadelphia, gathered the flowers of St. John's wort, soaked them in sweet oil that they might impart their virtues to it, and reverently labelled it "red oil." The red liquid thus obtained was carefully hoarded for the comfort of battered young humanity. A little later than this in the local history of our forefathers, arnica was the sovereign remedy, without which no household could be contented. To bring up a child without arnica was considered almost as hopeless as to bring him up without the Bible or the rod of Solomon. Probably owing to the enterprising, if not praiseworthy, efforts of an American drug firm, the days of arnica have been superseded by those of hamamelis, an herb whose reputation has waxed greater and greater until it has reached even a high point with the medical profession.

The enormous sale and mysterious properties of hamamelis have led us to undertake an investigation of the drug.

Unfortunately, the records of the physio-

logical experiments have been mislaid, and we have been unable to give the exact strength of the preparations used in the experimentations. Some pounds, however, of the powdered drug were allowed to macerate several days in water and then distilled. The first six ounces of the distillate were kept separate and used physiologically.

It will be seen that if the activity of hamamelis depends upon a volatile principle, the distillate which we employed was many times stronger than that sold in the drug-stores. Nevertheless, it was thrown into frogs until they were so full that their skins would hold no more, and the effects produced were no greater and no less than those which would have been caused by injections of similar quantities of distilled water. A single experiment was made upon mammals, with no more positive result, and we must conclude, therefore, that so far as the frog is concerned, and probably also mammals, the watery distillate of hamamelis has precisely the physiological value of water. It may be well to add that the distillate used had a very strong odor of the drug, but a chemical examination showed that it contained only the faintest trace of the volatile oil. In order to test the matter further a complete elaborate analysis of the drug was made, as follows:

Three kilogrammes of the finely-powdered dry root were macerated ten days with 6 litres petroleum ether (boiling-point not over 45° C.). A small portion (2 c.c.) of the resulting extract, in an appropriate vessel, was placed under a bell glass, and a stream of dry carbon dioxide passed over it until the odor of petroleum ether was hardly perceptible. The vessel containing the evaporated extract was then immediately covered and weighed. It was then uncovered and exposed to the air exactly one minute and then weighed. No loss of weight was observed. It was again uncovered and exposed to the air for one minute and weighed, without noticeable loss in weight. From this it was concluded that if a volatile oil were present in the volume (2 c.c.) of extract employed, it was in such small quantity as to be unweighable, therefore a larger volume (100 c.c.) of the petroleum ether extract was employed in the same manner as above described, but no loss of weight was observed.

The remaining quantity (about 4 litres) of petroleum ether extract was allowed to evaporate spontaneously until the odor of the ether was entirely dissipated. The residue possessed the odor which is peculiar to the aqueous and

* Merck's hydrochlorate of hydrastine is about six times more powerful than Parke, Davis & Co.'s hydrastine, which has been used to test its action on man because the Merck supply became exhausted.

alcoholic distillates of the root, but this odor lasted only a few minutes. The odor was most likely due to the presence of a volatile oil, but its quantity was so small, or it was so exceedingly volatile, that it could not be isolated qualitatively or estimated quantitatively. The fixed residue remaining in the vessel in which the evaporation took place consisted of fats and wax, which were not further investigated.

One kilogramme of the root, which had been previously extracted with petroleum ether and washed with about 2 litres of the same fluid, was macerated ten days with 2 litres of ethyl ether. The ether extract was collected and evaporated spontaneously, and the remaining residue, which was very small, and consisted mostly of fat which had escaped solution by the previous treatment with petroleum ether, was treated with water containing a couple of drops of dilute sulphuric acid, filtered and allowed to evaporate. Nothing was obtained.

The above-mentioned quantity (1 kilo.) of the powdered root which had been macerated with ethyl ether was now macerated ten days with strong alcohol. The extract obtained was dark brown in color, and contained only tannic acid and coloring matters.

The same powdered root which had been macerated with strong alcohol was dried at 35° C., and macerated twenty-four hours with 3 litres distilled water. The evaporated aqueous extract contained nothing but tannic acid and coloring matter which had not been wholly extracted by the previous treatment with strong alcohol.

The wet mass of the powdered root, after the extraction with water, was macerated twenty-four hours with 2 litres distilled water containing a very small quantity of sodium hydroxide. Nothing other than tannic acid and coloring matter were found in this extract.

The same mass of powdered root which had been extracted with water containing sodium hydroxide was now washed with distilled water and macerated twenty-four hours with water containing one per cent. hydrochloric acid. Nothing but a trace of calcium oxalate was found in the evaporated extract.

A portion of the powdered root which previously had been macerated in turn with petroleum ether, ethyl ether, and strong alcohol was treated in turn with chloroform, carbon disulphide, and benzol without obtaining anything other than fat which had escaped removal by the former treatment.

An examination was now made of the dis-

tillate obtained by distilling the powdered root separately with water and with alcohol.

One kilogramme of the powdered root was distilled with water, and the distillate concentrated by several distillations until the final distillate amounted to 150 c.c. This was divided in three equal portions, and to one portion a couple of drops of dilute acetic acid were added, to the second portion a couple of drops of very dilute sodium hydroxide solution were added, and to the third portion nothing was added. The three portions were evaporated in a stream of dry air, but no organic principle could be detected in any of them.

A quantity of water was added to 4 kilogrammes of the powdered root in a large copper retort, and to the latter a long Liebig's condenser was attached. Three litres of distillate, possessing the peculiar hamamelis odor, were collected, and a portion (1 litre) placed in a stoppered cylinder, a quantity of petroleum ether was added, and the two liquids thoroughly agitated, and the mixture allowed to stand twelve hours. By means of a pipette the separated petroleum ether was removed from the cylinder and placed in a suitable vessel and allowed to evaporate under a bell jar in a current of dry carbon dioxide until the odor of petroleum ether had disappeared. There remained a slight quantity of water possessing the odor noticed in ordinary aqueous distillates of hamamelis, but in more marked degree. Upon warming gently on a water-bath the odor entirely disappeared, and upon continuing the evaporation no fixed residue was left in the vessel.

The remaining 2 litres of the above-mentioned distillate were redistilled several times in order to concentrate the volatile substance in small volume of water. The final distillate, amounting to about 400 c.c., was placed in a stoppered cylinder and agitated with petroleum ether, and allowed to stand twelve hours. The petroleum ether was removed with a pipette and evaporated in a stream of dry carbon dioxide until the odor of petroleum ether was no longer perceptible. The residue consisted of a slight quantity of water, in which was observed what appeared to be an exceedingly small globule of oil, and which disappeared in very little time. The odor was strongly hamamelis-like, and disappeared upon warming on the water-bath, as did also the remainder of the liquid in the vessel without leaving any solid matter.

Four kilogrammes of the powdered root were distilled with alcohol until 3 litres of distillate were obtained. The three litres were

twice redistilled, and the distillate obtained in the final distillation, which amounted to 300 c.c., was placed in a stoppered cylinder and agitated, and allowed to stand twelve hours. The petroleum ether was removed and allowed to evaporate in a stream of dry carbon dioxide. When the petroleum ether had completely evaporated, there remained several minute globules of oil, hardly sufficient to produce the tiniest grease-spot on a piece of paper. It possessed the hamamelis odor, which disappeared in a little time.

The results which we have reached with hamamelis are in accord with those of Dr. Hector Guy, of Paris, who came to the conclusion, as the result of numerous experiments, that hamamelis Virginica is not toxic; that it has no special physiological action on the vascular system; and that it contains no alkaloid. We have shown that there is a very large percentage of tannic or gallic acid in the fluid extract, and the results which have been obtained by some physicians by the use of this fluid extract in cases of hemorrhoids and varicose veins are apparently explained by the presence of the astringent principle. The tannic acid, of course, would not come over in the distillation; therefore the much-used and still more lauded witch-hazel, or the so-called distillates of witch-hazel, must depend for their virtues upon the alcohol which they contain and the faith which they inspire.

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THE ACTION OF THE BROMIDE OF NICKEL.

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THE bromide of nickel was first brought to the attention of the profession, I believe, by Dr. J. M. Da Costa as a remedy for epilepsy and kindred disorders. The literature concerning it is limited, and few reports on its use and value have been made. This article is designed to call attention to a remedy which from all reports appears to be of value, in order that additional clinical research may be made by those who have the opportunity to give it a fair trial.

The chief interest in this drug centres on its action on the nervous system, and while analogy points to the belief that its action resembles the other bromine salts, the writer thought it well to perform the following experiments: If 3 grains of this drug be given

hypodermically to a medium-sized frog, he rapidly becomes quiet and drowsy, more and more vehement stimuli being required each moment to make him move; pricking with a pin soon fails to call forth any response. After ten minutes have elapsed the drowsiness passes into stupor, and the batrachian allows its toes to be burnt off without moving. The question at once arises, Is this failure of response to pain due to an action of the drug on the receptive centres in the brain, spinal cord, or on the sensory nerves? Analogy, again, tells us that the drug would hardly depress the brain receptive centres without also affecting the same centres in the spinal cord, and the truth of this is demonstrated by the fact that reflex action was lost, so that even a spinal movement of the limb failed to take place. If both hind legs of a frog be partially severed from the body in such a manner that the sciatic nerve is the only bond of union between the limb and the trunk, and a hypodermic of 3 grains of the salt injected into the left leg, it will be found that from the first there is a progressive failure of function on the part of the sensory nerve-fibres, for both electrical and other stimuli fail to call forth any reflex action or other movement in the poisoned member, while much weaker currents and irritants produce marked movements, both of pain and by reflex in the right leg. It seems likely, however, that under these circumstances there is at the very first only a cutaneous loss of sensation, since stimuli of a superficial character, which caused no muscular movements through reflex or pain, when applied directly to the nerve-trunk itself brought forth a response. I reiterate that this condition was only at the very first and of short duration. This experiment was now repeated, with the exception that strychnine was given into the posterior lymph-sac at the same time the bromide was injected into the leg for the purpose of stimulating the spinal cord to such a pitch that even the faintest impulse from the periphery would be recognized.

Notwithstanding the presence of the strychnine, which brought on a spasm when the unpoisoned leg was touched, strong galvanization of the poisoned limb at first only brought out slight response, and finally failed to produce any effect at all. Again, it was found that if the sciatic nerve, just as it emerged from the pelvis, was soaked in a solution of 4 grains to the drachm of this salt, stimulation, either of the foot or of the nerve itself, at the point of exposure, caused but slight response, and if the drug remained for five

minutes in contact with the nerve, no impulse apparently reached the cord, even when strychnine was again given for the purpose already detailed. That this was not due to any extraneous cause was proved by having the nerve in the opposite leg as much exposed to the air as its poisoned fellow, and by using the same stimuli to that nerve in order to obtain control results. That the drug affects the efferent nerves as well as the afferent was also proved by like experiments in other frogs. Thus, if the drug was injected into a partially severed leg, or if it was applied for some moments to the nerve-trunk of such a leg, strychnine having been injected into the trunk, it was found that during a convulsion the poisoned leg escaped entirely, while the unpoisoned partially severed leg was tonically contracted. This experiment was so frequently performed that there can be no mistake as to the result. Along with the failure of the nerve-trunks comes later on loss of muscular contractility, for in a leg to the muscles of which was applied for some minutes the 4-grain solution already named, it was found necessary to increase the strength of the current to twice the strength required to contract the normal muscle.

On the spinal cord the drug exerts its influences very powerfully and rapidly. After the giving of 3 grains hypodermically into the trunk there was progressive failure of reflex motion, and that this was not due to the influence of the drug on the nerve trunk already described was proved by preparing a leg in the same manner as before, and by tying the artery of a leg previous to the administration of the drug, both of which procedures of course protected the nerve-trunks in those limbs. This result was verified by using strychnine and the bromide of nickel together, when it was found that larger doses of the excito-motor were needed to produce convulsions than when no bromide was used. Again, direct stimulation of the spinal cord when the drug was applied to it, failed to produce movement.

If the cut-out heart of a frog be dropped into a solution of the bromide of nickel of the strength of 4 grains to the drachm of water, its movements are instantly stopped, and do not return even when the viscus is immediately withdrawn from the fluid and dipped in pure water to rid it of the poison. Galvanization of the heart-muscle also fails to produce movement, and it is evident, therefore, that this salt must in large doses paralyze the contractile power of the heart-muscle. As a control experiment, the hearts of other frogs

were exposed as they lay in their pericardial sacs and the solution above named dropped on them. In a period of time only slightly more prolonged than when the viscus was isolated, the heart stopped in diastole. The same result is also obtained more slowly if 10 grains of the drug are administered hypodermically, the cardiac movements gradually becoming more and more irregular and imperfect, until they stop altogether. According to several manometrical tracings taken from the higher animals, as represented by the dog, it is evident that this salt affects the heart of the mammals in the same manner as that of the batrachian. If a large dose (15 grains) be injected in ten seconds into the jugular vein, the heart is instantly stopped, so that the manometer pen falls almost perpendicularly to the abscissa line. That smaller doses depress the heart also is shown by the fact that even a dose of 1 or 2 grains decreases the height of each individual pulse-wave very considerably, and produces a fall in rate and pressure. If the above-named doses are used, the rate and pressure return in the course of ten seconds to their normal points, but cardiac force, although it recovers slightly, does not ever again regain its former strength. As the size of the dose is increased the cardiac force progressively fails. Large doses depress the arterial pressure very considerably, the fall seeming to be due to cardiac failure as well as to vaso-motor palsy. Both small and large doses momentarily slow the heart, and that this slowing is not due to stimulation of the inhibitory nerve but to weakness seems probable on account of the fact already proven, that the drug is a paralyzant to the heart-muscle; and also because of the feeble pulse-waves which accompany the decrease in rate, and which in no way resemble the pulse-waves of inhibition. Apparent contradiction to this belief lies in the fact that when the heart had been slowed from 192 to 132 beats per minute by the injection of 10 grains of the drug, section of the vagi caused the rate to rise to 186 per minute, with an accompanying rise of pressure due to the increased rate. While at first sight this seems to prove the falsity of the opinion already expressed, I do not believe that it is in reality proof of vagal stimulation for several reasons. In the first place, the increase of rate on section of the vagi did not reach the rate present previous to the dose (viz., 192 per minute), which it should have done had the slowing been due to vagal stimulation. Indeed, under such circumstances, the rate

should exceed by many beats the normal, because before the dose and section the inhibition always present was exerting its effects, while after section of the vagi *all* inhibition was swept away.

The second reason for clinging to the first opinion has already been stated, consisting in the weakness and feebleness of the heart, with the knowledge that in large doses the drug acts as an absolute paralyzant of the heart-muscle. It is very evident also that the drug produces vaso-motor palsy eventually if in large enough dose, from the progressive lowering of arterial pressure from the moment the first dose was given until the last.

Details of experiments showing rise of rate and pressure after section of vagi.

I. Dog; weight, 17 pounds. Bromide of nickel. Arterial pressure already depressed by previous doses.

Time.	Drug.	Press.	Pulse.	Remarks.
4.06.20	84-80	198	
4.06.30	10 grs. of nickel.	88-80	192	Injection begun.
4.06.45	90-80	204	Injection ended.
4.06.55	86-56	180	
4.07.05	56-20	156	Pulse-waves very small.
4.07.15	20-10	132	Vagi cut.
4.07.25	25-20	126	
4.07.35	20-20	144	
4.07.45	30-40	144	
4.07.55	40	174	
4.08.05	44-60	162	
4.08.15	70-80	186	
4.08.25	10 grs. of nickel.	88-66	180	
4.08.35	66-0	.....	Dead.

II. Beginning small doses. Half-grown pup; weight, 17 pounds. Bromide of nickel. March 27, 1886.

Time.	Drug.	Press.	Pulse.	Remarks.
3.47	160-120	108	
3.47.10	1 gr. in 10 c.c.	120-160	114	Injection begun.
3.47.20	160-120	114	Injection ended.
3.47.30	160-124	90	
3.47.40	160-124	84	
3.47.50	166-130	72	
3.48	156-130	90	
3.48.20	156-120	90	
3.50	112-150	120	
3.51	126-150	114	
3.51.10	160-142	114	
3.51.20	2 grs. in 10 c.c.	144-124	120	Injection begun.
3.51.30	140-100	114	
3.51.40	106-140	96	Injection ended.
3.51.50	140-134	90	
3.52	100-130	114	
3.53	120-92	198	

Time.	Drug.	Press.	Pulse.	Remarks.
3.53.10	3 grs. in 10 c.c.	120-90	186	Begun.
3.53.20	100-120	192	
3.53.30	120-100	192	Ended.
3.53.40	80-112	216	
3.54	90-144	186	
3.54.10	5 gr. in 10 c.c.	90-110	198	Begun.
3.54.20	106-84	192	
3.54.30	94-80	186	Ended.
3.54.40	80-96	180	
3.55	70-80	198	
3.55.10	7 grs. in 10 c.c.	80-70	188	Begun.
3.55.20	66-80	186	
3.55.30	80-54	180	Ended.
3.55.40	60-44	198	
3.55.50	44-56	218	
4.05	50-90	210	
4.05.10	7 grs. in 10 c.c.	84-90	204	Injection begun.
4.05.20	84-90	204	Injection begun.
4.05.30	84-90	216	Injection ended.
4.05.40	84-64	192	
4.05.50	72-62	168	
4.05.50	66-80	198	
4.06.20	84-80	198	
4.06.30	10 grs. in 10 c.c.	88-80	192	Begun.
4.06.45	90-80	204	Ended.
4.06.55	86-56	180	
4.07.05	56-20	156	
4.07.15	20-10	132	Vagi cut.
4.07.25	25-20	126	
4.07.35	20-20	144	
4.07.45	30-40	144	Rise due to section of vagi.
4.07.55	40	174	
4.08.05	44-60	162	
4.08.15	70-80	186	
4.08.25	10 grs. in 10 c.c.	88-66	180	
4.08.35	66-00	.....

III. Old dog; weight, 12 pounds. Bromide of nickel. March 26, 1886.

Time.	Drug.	Press.	Pulse.	Remarks.
3.20	156-168	144	
3.20.10	5 grs. in 10 c.c.	152-166	144	Injection begun.
3.20.25	154-100	156	Injection ended.
3.20.35	100-74	138	
3.20.45	90-96	96	
3.20.55	94-110	60	
3.21.05	110-128	90	
3.21.15	120-136	84	
3.21.25	5 grs. in 10 c.c.	128-140	84	Injection begun.
3.21.35	136-112	72	Injection ended.
3.21.45	114-120	90	
3.21.55	110-114	108	
3.22.05	110-116	126	
3.22.15	114-120	132	
3.22.25	114-120	144	
3.22.35	116-120	144	
3.22.45	5 grs. in 10 c.c.	120-128	168	Injection begun.

Time.	Drug.	Press.	Pulse.	Remarks.
3.23.55	128-72	132	
3.23.05	50-10	66	Injection ended.
3 23.15	6	.....	Dead; respiration continued after death.

The only clinical report on this drug which I have been able to find is that of Dr. R. Leaman, in the *Medical News* for April 18, 1885, who, after getting unsatisfactory results from its use at first, concludes that the remedy is of great value. The bromide of nickel is a greenish-yellow powder, of a sharp, almost burning taste; when dissolved in water the solution becomes almost grass-green. Notwithstanding its burning taste, the writer quoted says that he has found it borne by the stomach better than all the other bromides, and he also recommends its use in an effervescing form, made by mixing the salt with bicarbonate of sodium and tartaric acid, moistening with alcohol, passing the moist powder through a sieve, and then drying it in a warm closet. He then goes on to say that he estimates that 10 grains of the nickel salt is equal in efficiency, in his opinion, to 30 grains of the bromide of potassium. He believes it to be particularly indicated in those cases suffering from melancholia and hysterical conditions, and quotes cases of sexual melancholia and epilepsy which were much benefited by the use of the drug. The dose he believes to be from 5 to 10 grains, but states that when the effervescing mixture already named is used slightly larger doses are necessary.

*A FEW REMARKS UPON THE METHODS
EMPLOYED NOWADAYS FOR THE DIS-
POSAL OF THE DEAD, WITH SUG-
GESTIONS TENDING TO REM-
EDY THE PRINCIPAL EVILS
OCCURRING AS A RE-
SULT OF THESE
METHODS.*

BY A. F. EKLUND, M.D., STOCKHOLM, SWEDEN.

HAPPILY, the dangers to which individuals and the public at large are exposed as regards health, occurring as a direct result of the presence of cemeteries, are so limited, and imbued with so little authenticity, that the necessity of speaking upon a question already solved to the satisfaction of almost all interested parties may be relegated to a position of doubt. But, however, as the author of these lines belongs to the minority, certainly

not small, of those who have gradually arrived at a positive opinion that not only the arrangement of cemeteries, but also that certain funeral practices offer grave and unwarranted imperfections, he has not hesitated to formulate objections,—first, as to the manipulation of corpses during the time which elapses between the moment of death and the final burial; second, as to the rules and regulations promulgated by competent authorities upon these subjects; and, third, upon projects proposed by honorable colleagues tending to decrease the imminent dangers to general health occurring as a consequence of the putrefaction of the interred bodies.

In the first place, allow me to call your attention in a few words to a few details representing, in my opinion, the most natural explanation of the fear, nay, the detestation, in which cemeteries are at present held by the public. The execrable hygienic conditions of the greater portion of our fellow-men who form the lowest classes of society cause many organisms to fall into a state of degeneration long before the last spark of life has left the body. As an example, I need only cite the case of little children affected with intestinal catarrh or with diphtheria, who, since their birth, have breathed night and day the emanations of excrementitious gases, alcoholic exhalations, and tobacco-smoke of adults living in the same hovel. The cadaveric odor of such corpses is far beyond expression, and natural instinct suffices to demonstrate the fact that such cadavers are prodigiously venomous and pestiferous. Corruption and its resulting fetid emanations reach their greatest intensity, however, when, in addition to the wretched hygienic conditions, the different forms of debauch associated with prolonged sleeplessness and unwarranted loss of rest have contributed to undermine the health and accelerate disorganization. To what excesses have drunkards, syphilitics, and tobaccophiles not “putrefied” themselves long before death! What rapid progress the process of putrefaction must make immediately after death! What disgusting cadavers!

Again, I want to cite two of the most frequently met with diseases,—phthisis and carcinoma. What nauseating infection do consumptives and the cancerous disseminate, as a rule, around them, especially when the end is near at hand! What progress the putrefaction process must have already made during their miserable life! As is well known, there frequently results in these affections, and almost always in nephritis, in fatty accumula-

tions, in heart-troubles, and adipose degeneration of the latter, in cirrhosis of the liver, etc., a dropsical state, presenting itself early or late in the course of these affections. When, after all medicinal means have failed, and the patience of the physician and the surroundings has given way, recourse is had to scarification of the skin, so as to allow the serum to run off, if it has not already begun to do so spontaneously. It is evident that after death the flow of serum continues, nay, often increases. The bed and bedding, and frequently several boards of the floor, have imbibed a quantity of the fluid, which not only contains different patho- and sapriogenic germs, but constitutes a potent fertilizer for the micro-organisms which find themselves beforehand in the dust between the cracks of the floor.

What of autopsies? Are hygienic considerations conscientiously observed, or does want of all cleanliness not demonstrate the contrary? Sometimes, in carrying the dead out of the house in which the demise occurred, it happens that the cadaveric humors ooze out through the slits of ill-constructed coffins, soiling the balusters, the halls and stairs, the church floor, etc., and it frequently happens that indifference is pushed to a degree sufficient to allow the places and things soiled by the cadaveric fluid to remain uncleansed. Generally, however, the cleansing process is at once begun, but it in no way differs from the usual every-day procedures, their efficiency depending entirely upon the habits and natural tendencies of the persons intrusted with the job. It stands to reason that the infiltration of cadaveric fluids into the dirt lying between the floor-boards, etc., must form a source of great danger, in a sanitary point of view.

Another state of things may be added to the above, one which repeats itself every day. It is certainly sad that no student of sanitary science has as yet given it serious attention, although it is well worthy of it, the more so since no voice has as yet been raised against it with an energetic appeal for reform. I am alluding to the careless changing of residence, or of furniture, and to the reckless wearing of clothes, etc., having belonged to deceased individuals, and left by them as legacy, etc. How many chances do parents take for their children when, unsuspectingly and without due circumspection, they place their pets in rooms which have probably contained within the last six months the corpse of a case of diphtheria, scarlatina, smallpox, etc. ! Again,

what risk does an individual not run who occupies the non-disinfected rooms or clothes of a recently deceased tuberculous or carcinomatous patient? How many times have we observed large white swellings over the knee-caps of small children, the result of a splinter introduced under the skin while crawling? This demonstrates that hygiene has as yet not only many problems of the highest importance to solve theoretically, but that police ordinances should cause the hygienic mandates to be practically enforced.

An important indication of the general appreciation of these dangers is, that the partisans of cremation are increasing in number every day, and it is quite likely that the time is not far distant when its practice will be recognized by law. While I do not myself belong to the advocates of incineration, I do not hesitate to admit my acquiescence to this mode of procedure, on the condition that the applicants present a death certificate, signed by three persons, belonging, if possible, to different "beliefs," for instance, an idealist, a realist, and an atheist, each having cared for the patient upon his death-bed. I am positive that this return to pagan customs, which cremation certainly is, will not by any means involve the extinction of Christianity, as desired probably by many proselytes of incineration, and I seriously believe that one can be a passable Christian and believe in this method of treating the dead, which does not possess the least anti-Christian tendency; but, however, I perhaps do not err greatly in supposing that in the future, as now, burial in sacred tombs, such as that of our Saviour, for instance, will constitute the general rule.

In the first place, we must determine what reforms, in the methods of burial now employed, are of prime necessity. I have already alluded to the disgusting state of dissolution into which a large number of sick subjects have arrived before death. In cases in which this preliminary disorganization does not exist, only a very brief period transpires, even in our cold climates, before signs of putrefaction present themselves, the disorganization then progressing rapidly. At all times and in all countries great repugnance, horror, and aversion have existed at the sight of putrefaction. It is, in fact, terrible for loving parents to witness the putrid degeneration of one or more beloved children, or of relatives and sincere friends to behold those they dearly loved undergoing the same fatality! How terrible! This forms one of the principal causes for the daily increasing sympathy in

favor of embalming, which already has assumed sufficient importance to form a majority, which places the cremation clique in the shade. For this I would humbly solicit that an interest in the public mind be awakened in favor of embalming, and that its benefits be extended to and obtainable by everybody, even those deprived of all resources. In fact, I maintain that embalming of the dead should become obligatory with time, provided that a general agreement as to methods of procedure and ends to be attained be reached. Old women's unconfirmed and unverified tales about the burial of living subjects will at the same time be brought to an end.

It is a well-known fact that the process of putrefaction, of which vibrios, bacilli, and micrococci are the foundation, and which are found in quantities innumerable in the intestines of human organisms during life, progresses rapidly during the first, or the first three, months after death, when the simultaneous colliquative softening of the organs causes the bacteria of putrefaction to develop in myriads. The quantity of putrefactive products, liquid and gaseous, formed, which penetrates the ground, and especially the underlying stratum, is much more considerable during that time than later, when the decomposition of the cadaver decreases after the liquids have escaped and the bacteria of putrefaction have been supplanted by mere moulding of the remnants. The putrefactive process is most rapid in the cadavers of the victims of epidemics, without demonstrating in any manner that specific pathogenic schizomycetes, for instance, those of scarlatina, or those of ileo-typhus, are rendered inactive, or destroyed by the bacteria of putrefaction.

Thus have things been conducted to the present day. In my opinion, however, the best means would be to encourage rapid destruction of cadavers by chemical means, reducing at the same time the process of putrefaction, and consequently checking the deleterious influence upon the ground, the water permeating it, and the surrounding atmosphere.

The simplest procedure that I would suggest, for the purpose of arresting putrefaction, would be to inject a saturated solution of common salt, with a little "depurated ferric acid" and boracic acid, into the arteries of cadavers. In cases of death from infectious diseases, however, it would be advisable to inject first a solution of biniodide of mer-

cury or of bichloride of mercury, dissolved in a hot solution of iodide of potassium, this again in alcohol, or a solution of chloride of ammonium or sodium. As is well known in the medical world, mercuric iodide heads the list of disinfectants. According to Miguel, 25 milligr. of biniodide of mercury and 30 milligr. of bichloride of mercury are sufficient to prevent the putrid degeneration of a quart of beef-tea. To obtain the same result, 165 gram. of chloride of sodium must be employed, so that the action of common salt is inferior to that of biniodide of mercury 6600 times. Again, since other minerals, such as sulphuric, nitric, or hydrochloric acids possess powerful energy in preventing the multiplication of schizomycetes, and are sold at very low price, it would be advantageous, and at the same time cost almost nothing, to introduce, by means of a sound through the oesophagus, the trachea, and the rectum, a certain quantity of these acids into the stomach, lungs, and colon. Again, I would recommend that the trunk and the extremities of the cadavers be wrapped with a layer, 5 to 8 millim. thick, of lime packed into long flat bags that can be wrapped like a belt around those parts.

It would be desirable that police ordinances relating to the burial of the dead contain provisions with a view to enforcing the following features: That the bottoms of coffins be made impermeable to water, and be covered with a layer, 5 to 8 mm. thick, of substances possessing absorbent properties, such as dry earth, the crushed acicular leaves of resinous trees, ashes, saw-dust, and charcoal-dust. Just before closing the coffin, the hands and face should be covered with lime.

For the fulfilment of the above measures a new form of educated labor would become necessary,—there must be "embalmers," of both sexes; while to insure the proper carrying out of the project, a special police service, under an inspector, should also be established. The former would be specially instructed in the performance of their duties, and only to exercise them when thoroughly acquainted with the several manipulations. At the occurrence of a death, the police inspector, notified at once by the friends of the deceased, would repair to the house of the latter, accompanied by the embalmer, who should at once carry out his duties, and thus check from the start any danger of infection.

THE HYGIENE OF OLD AGE.

By H. C. WOOD, M.D.

WITHIN a few weeks the city of Philadelphia has been called upon to mourn the loss of the man who, although very far from intellectually the greatest within her borders, as a citizen was pre-eminently chief. Dying at the age of eighty or eighty-one years, he is universally spoken of as being gathered like a ripened sheaf; yet, within a week of his burial, he was full of mental and physical vigor, and his death at the time was as unnecessary and avoidable as though he had only reached threescore years. A very notable percentage of the deaths of persons who have been successful in life, and have attained beyond the seventieth year, could be, by proper care, long postponed. Failure in life in a large proportion of cases saps vitality, and the man who carries the load of self-knowledge of such failure lives under a persistent strain, whose effects, though usually not recognized, are none the less irresistible. In order to protract an advanced life it is well to understand not only the dangers that beset such life, but the reason why old age has been attained.

The humorist is greatest when underlying his rollicking is the lesson of a great truth; but perhaps few readers, when they enjoyed the broad fun of the "One-Horse Shay," as portrayed by our inimitable Holmes, have recognized the fact that the man who reaches old age does so largely because he has been constructed upon the principles of the famous vehicle "that ran for a hundred years and a day." Barring accidental deaths from railroad collisions, typhoid fevers, lightning-strokes, and other more or less preventable causes, the man who is so built that he is equally strong in all his parts, lives out his appointed days.

Excessive strength in one part is a veritable source of danger. The athlete perishes because his over-developed muscular system perpetually strains and finally wears out a heart or a lung that was originally constructed for a muscular apparatus of half the power of that which he has artificially built up. The larger proportion of mankind die early on account of some local weakness. It ought to be generally recognized that human age is not to be counted by years, and that in some constitutions the general tissues are older at fifty than they are in other individuals at one hundred. Many of the cases of so-called neurasthenia, or nervous exhaustion, of men and

women suddenly or gradually breaking down at forty or fifty, ostensibly from overwork, are really cases of premature old age, and are to be nursed and treated precisely as other individuals would be who had reached to four-score years. Moreover, a larger proportion of early deaths are the result of some vital organ being originally endowed with a longevity less than that of the rest of the organism. The reason that consumption is so often utterly irremediable is to be found in the fact that in not a few cases the lung has reached its allotted term of days, and must die because its vitality is exhausted. If an eye, or other not vital part, fails from lack of vital power, the man exists; but if a lung dies, he perishes.

The result of these lucubrations is to lead us to this point, namely, that the individual who enjoys fair health at seventy-five years of age has probably been built upon the principle of the "One-Horse Shay," and that he should be treated as a wise man would treat such a venerable instrument of progression. He would certainly keep it off Philadelphia cobble-stones, and allow it only to be bowled along some smooth turnpike, and especially would he avoid all jolts and jars which would throw an unexpected strain upon one part. The principle involved in such case is that which is most vital in the treatment of the old,—protection, and especially protection from strain of any one vital part. An old man exposes himself to inclement weather, and especially to a high wind, which suddenly drives the blood from the surface upon the internal organs, and at the same time by its very force checks the enfeebled movements of respiration, which aid in forcing the blood out from those organs. As a result, the man perishes at once, because he has thrown too great a strain upon a weak heart, or, if able to momentarily resist the strain, dies in a few days of pneumonia, due to the congestion of the lung. I have known the sudden shock of good news to strike the old man down, as fatally as the pole-axe fells the bullock, by causing the blood to rush with renewed force through the brain, and tear its way through the weakened walls of the blood-vessels. Again, the violent emotion of a sudden bad news may overwhelm a heart which, with care, would have sufficed for its duties for many years. The young athlete in the boat-race pulls at his oar until he drops from heart-strain, and, if the heart-strain has not been too severe, recovers himself in a few weeks, because the vital elasticity of the heart-tissues is in high-

est vigor. But the enfeebled and brittle heart-muscle of the old man, strained in some hurried effort to catch a railroad train, or in some equally unreasonable procedure, has no power of recovery, and rests itself only in death. What is true in regard to the healthy ordinary conditions of the old man is more abundantly true in regard to the diseases of the old. Medicines that perturbate—measures that bring relief through violent local actions cannot be borne, and are not to be employed. At the same time, when possible, it is most essential to arrest at once any incipient disorder in the aged. I knew an old doctor, renowned in all lands, who lived ten years beyond the period attained before by any one of his name, largely because, knowing himself thoroughly, every few weeks he arrested in its inception an attack, which, in a few hours, might have gathered fatal force.

I feel some hesitation in attempting to point out in detail the application of the principles which have just been enunciated, lest this paper may fall into the hands of aged persons, and be substituted for a careful consideration of their individual cases by some skilful medical practitioner. Every person, when he advances in years, should go over his whole methods of life and personal habits with some wise counsellor, and should adapt his mode of life to the peculiarities of his individual case. With this warning, it is probably safe to briefly point out some of the more important details in the regulation of the life of old people. The first question is in regard to food. The teeth in old age are, of course, lost, and they should, unless under exceptional circumstances, be replaced by artificial teeth, for the thorough chewing of food is even more necessary in the old than in the young, because in the old the digestive powers are apt to fail. With the best artificial teeth mastication is apt to be imperfectly performed; hence the food of the aged should be soft and readily comminuted, and especially should it be of easy digestion. Very few old people need stimulating diet; very many are injured by an excess of nitrogenous food. The kidneys, like all other organs, are feeble, and, if meats and other rich foods are used in excess, they greatly increase the strain upon these organs. Milk and milk products, or preparations of breadstuffs cooked with milk, should form a very large proportion of the food of the ordinary aged individual; but individual peculiarities differ so much that personal medical counsel should in all cases be taken, so that the diet may be regulated to the needs

of the individual case. Very many old people are hurt by the use of food in excessive quantity; but little exercise can be taken, all growth has ceased, and the bodily furnaces which make heat are able to destroy by very little of food fuel. Some little time since I had occasion to lecture on this subject at the Philadelphia Hospital, and an assertion that I then made that most old people are more comfortable, enjoy better health, and probably live longer for the use of wine, has met with very severe disapprobation at the hands of some of the profession, whose strong sympathy with the temperance movement dominates their judgment. No valid reasons have, however, so far as my judgment goes, been brought forward to lead me to change my opinion. In the overfed American people the habitual use of wine during youthful or middle age and vigorous health is, we think, an injury rather than a good; but when the powers of life are failing, when digestion is weak, and the multitudinous small ills of feebleness perplex and annoy, one or two glasses of generous wine at dinner aid digestion, quiet for the time being much nervous irritation, and in no way do harm. The sum total of ruin wrought by alcohol in the world is appalling, but it is not lessened by our shutting our eyes to the good that wine properly used may achieve. When in the aged there is a distinct failure of vital power, and especially of digestive power, the call for the habitual use of alcoholic liquors is, in my opinion, imperative. The danger of the formation of any evil habits when a man has crossed the line of seventy is so slight, that the most conscientious physician need not hesitate in recommending the daily use of alcoholic beverages to his patient.

It is, perhaps, not universally recognized, that in numerous cases of various character death finally is due, in greater or less measure, to cold and to an absolute failure on the part of the body to keep itself warm. In the old the heat-making functions are exceedingly low, and hence it is that few old people are comfortable in a room whose temperature is less than 80°. It is especially important, therefore, that an abundance of clothes be worn by old people; but the very weight of the clothes oppresses, so that it is important that lightness of material should be combined with warmth. There is no ordinary garment which compares in heat-preserving powers with the buckskin jacket, and, in our climate, every man who passes the seventieth year should furnish himself with such covering. At first the jacket should be only worn when

going out of doors ; but in very advanced age it should form a part of the habitual underwear. The jacket should be high up in the neck and long in the sleeves, and should be of such a length as to thoroughly cover the abdomen. If worn as an under-jacket, it should be perforated so as to allow the escape of the vaporous emanations from the body. Whenever there is any tendency to abdominal weakness, in addition to the jacket and the ordinary warm underclothes, an abdominal flannel bandage should be worn. It ought not to be forgotten that the mass of blood of the human body is in the abdominal organs, and that this is especially so when the circulation is sluggish. It is affirmed by authority, that after death all the blood of the body can be put in the relaxed abdominal vessels ; hence the importance of maintaining the abdominal warmth, and hence also the good effect in feeble people with pendulous bellies of the bandage, which helps to sustain the relaxed vessels, and thereby maintain the general circulation. The mechanical effects of tight abdominal bandages are well understood by the profession in the treatment of ascites. It is well known that the sudden removal of the fluid by tapping over the abdominal cavity take away so much pressure from the abdominal vessels as to cause them to relax, and draw the blood away from the heart and lungs and brain in sufficient quantity to produce fainting. It is to prevent this that the patient about to be tapped is bound up, and the bandage continually tightened as the water flows off. The importance of the habitual abdominal bandage is, perhaps, no less although not as universally recognized.

ON THE USE OF QUININE IN CHRONIC DYSENTERY.

By C. J. MARSH, M.D., THRACE, ARK.

THE report by Dr. Bevill in the last number of the *GAZETTE* of a case of chronic dysentery cured, as he claims, by quinine, leads me to report a case that came under my care a few years ago.

In the spring of 1880, a man, about 35 years of age, applied to me for treatment of a chronic dysentery of four years' standing. He gave the following history of his case :

Four years previous to his coming under my care he had been attacked, while working on a Mississippi River steamer, with acute dysentery of a violent type, for which he had,

I presume, the ordinary treatment, and made a partial recovery. He had, however, never at any time been entirely well, as the stools all the time were of a more or less dysenteric character.

When he came to me he was much emaciated, and suffered a great deal of pain both day and night, as the bowels moved from twelve to twenty times during the twenty-four hours, the discharges being of the typical dysenteric character.

On the supposition that there was more or less of a malarial element in the case, I gave him 5 grains of quinine three times a day in capsules.

In connection with the quinine, to relieve pain and tenesmus, and to secure rest to the bowel, and to facilitate the healing of the ulcers of the mucous membrane, I gave him a pill three times a day before meals, composed of subnitrate of bismuth 5 grains, nitrate of silver and morphine each $\frac{1}{8}$ grain, with enough extract of gentian to make a mass. I gave him also an occasional laxative dose of castor oil at night. By following out this course of treatment, with proper regulation of diet, he made a perfect recovery in three months.

While it would be absurd to claim that the quinine effected the cure in this case, it seemed to do its full share in bringing about that happy result,—that is, I consider quinine as a valuable adjuvant in the treatment of such cases when caused or complicated by malarial intoxication.

POISONING FROM BELLADONNA OINTMENT.

By DR. J. BLOOMFIELD, NAPOLEON, OHIO.

THE following case is of interest, as showing the extreme susceptibility of some persons to the effects of belladonna.

L. D., a strong, healthy girl, 12 years of age, was recently taken with pneumonia. About the time of the crisis I noticed the parotid gland began swelling, and by the second day after the crisis the gland was considerably swollen and painful. At this time the pulse and temperature were normal, and resolution well established.

I directed that belladonna ointment (U. S. P.) be rubbed on the skin over the gland night and morning to relieve the pain. The ointment was applied in the evening (the child sleeping during the night) and again in the morning.

About two hours after the last application I was called in a hurry to see the patient.

I found her pupils largely dilated, face very red, and imagining she saw all kinds of horrible things around her. Her hallucinations were of such a character that considerable force was necessary at times to keep her in bed. Pulse 76, temperature 98° F.

This condition continued till nine o'clock in the evening, when the patient went into a quiet sleep, not awaking till morning.

I visited her the next morning, and found hallucinations had disappeared, the pupils but little dilated, and only slight redness of the cheeks remaining.

The swelling of the gland subsided in a few days, and the patient made a good recovery.

MYCOTIC ENDOCARDITIS.

DR. WYSSKOWITSCH details the particulars of an experimental inquiry into the nature of ulcerative endocarditis (*Virchow's Archiv*, 103, Heft 2), to which is prefixed an account of the histological examination of twelve cases of endocarditis in the human subject. Four of these cases were chronic valvular thickening with calcification and necrotic areas, surmounted by warty deposits of fibrin; in four others the vegetations were more or less vascularized at their union with proliferated endothelial layers (thrombo-endocarditis); the ninth case appeared to be a chronic condition of the preceding; the tenth and eleventh showed post-mortem œdema after chronic endocarditis, with, in one case, bacteria (undoubtedly saprophytes). Lastly, there was a recent case of ulcerative endocarditis, which yielded abundance of micrococci on the valves, in the spleen, and kidneys; on cultivation the micro-organisms had the characters of staphylococcus pyogenes aureus. The experiments which form the second part of his paper consisted in inflicting on rabbits an injury of the aortic valve by means of an instrument passed down the carotid artery; then injecting into a vein a few hours later cultures of various micro-organisms. It was shown that the operation of piercing the valve was well borne, and not *per se* followed by any pathological consequences; but that the inoculation was often productive of a malignant mycotic endocarditis upon the injured valve, with secondary metastasis, as in human ulcerative endocarditis. These positive results occurred when the inoculation was made with either of the following micro-organisms:

Streptococcus pyogenes, *staphylococcus pyogenes aureus*, and *coccus sepsis* (Nicolaier); but the injection of *micrococcus tetragonus* and *bacillus pneumoniae* had no such sequel. It was also found that the staphylococcus produced much inflammatory reaction and suppuration, whereas the streptococcus, although causing much more valvular deposit and more numerous infarctions, had no such severe action. The changes in the heart and vessels were not limited to the valves pierced by the stylet: the micrococci growing also on the mitral valve and aortic wall, which happened to be eroded by the passage of the instrument. It is, therefore, suggested that mycotic endocarditis may be of various forms depending upon different varieties of micro-organisms. Other experiments to induce endocarditis after inhalation and subcutaneous injection of streptococci yielded negative results; but it was found that the rabbit can only bear inhalation of very small quantities, and it was doubtful if the micro-organism entered the blood-stream at all. Professor Orth, under whose direction this research was undertaken at Göttingen, comments in another article upon the results obtained; they prove, he thinks, that the term "disposition" is no empty one, the mechanical injury of the tissue laying it open to the attacks of the micrococcus which is deposited in the clots. The experiments show also how slight may be the amount of injury required to so lower the vital resistance of the tissue.—*Lancet*, April 10, 1886.

ANTIPYRIN IN PERNICIOUS FORMS OF MALARIAL FEVER.

DR. JOHN HOPE POTTER, writing to the *Lancet* for April 10, 1886, states that he has obtained very satisfactory results in the treatment of severe forms of malarial fever by the administration of large and repeated doses of antipyrin; he says that particularly in cases of a remittent type, which are not amenable to ordinary treatment, whether by quinine, arsenic, or diaphoretics with aconite, the administration of antipyrin has produced an instant cure in cases which for weeks had been quite unaffected by the ordinary remedies. In a few cases where the effects were found to be unsatisfactory, abscess of the liver, phthisis, or other complication subsequently developed. He is of the opinion that in pernicious forms of uncomplicated malarial fever we have in antipyrin a most valuable aid to treatment.

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Leading Articles.

ADMINISTRATION OF THE SALICYLATES.

CLINICAL experience seems to us to have proven that the salicylates are almost as much of a specific in rheumatism as is quinine in intermittent fever. The cases are further parallel in the facts that precisely as we have no knowledge of the nature of the malarial poison, and the way in which it affects the system, so have we no knowledge of the nature of the rheumatic poison and its relation to the system; if, indeed, rheumatism be due to the presence of the poison, and be not after all a neurosis. Further, since the pathologist has failed to give the basis, the therapist cannot explain either how quinine acts in malaria, or how the salicylates act in rheumatism. Until our pathological knowledge be more complete, to essay an explanation of the therapeutic facts would be to attempt to build a house in the air without a foundation.

The best method of administering quinine in malarial fever is even yet one concerning which physicians are not agreed, but in our opinion the right method is not to give for a length of time 6, 8, or 10 grains a day of the

cinchona alkaloid, but to employ it in overwhelming dose, so as to at once abort the intermittent paroxysm. We are much inclined to believe that the proper use of the salicylates is in the same way, and that many of the failures that occur with it in rheumatism are due to an incorrect method of administration. We have always obtained the best results by giving the remedy for thirty-six hours in doses as large as can be borne, then ceasing medication for one, two, or three days, and again giving a very large dose. Even the Apostle Paul expressed fears lest he himself should at some time forget his own teachings, and most of us occasionally lose sight of our own principles. Such forgetfulness led quite recently to a new lesson concerning the salicylates. A patient had been under our care for six weeks with sciatica, the salicylates of sodium had been exhibited in moderately full doses daily for weeks with only a measure of improvement, then the case was treated with iodide, etc. Finally, the symptoms not yielding, the man was put back upon the salicylate, and was ordered a dessertspoonful of a mixture three times a day containing 30 grains of sodium salts. By mistake of the nurse a tablespoonful was given instead of a dessertspoonful, so that the patient got in the twenty-four hours 3 drachms of the salicylate; the consequence was an immediate arrest of all the symptoms. Those of our readers who have ever camped out in the woods will appreciate the fact that you may tap all day at a half-rotten dry log with an axe without splitting it, but one-tenth of the force thus wasted will disrupt the wood when concentrated into a single tremendous blow.

There is little or no danger from the use even of very large doses of the salicylate, provided that these doses be separated from one another so that no accumulation of the salt can occur in the system. Recent experiments show that, except in enormous amounts, the salicylates are not depressant to the circulation. Indeed, Hugues Oltremare, of Paris, and Danewsky, of Moscow, are in accord in showing that moderate doses in the lower animals produce an increase of the arterial pressure, which, according to the experiments of Danewsky, are chiefly the result of the excitation of the vaso-motor centre, as is shown by the fact that it is prevented by section of the spinal cord,—i.e., by vaso-motor paralysis. Further, in 1884, Maragliano published a long series of sphygmographic and sphygmometrical studies upon men, which showed that the arterial pressure is usually elevated,

and never depressed even by the largest therapeutic doses of the drug. It is possible that the general feeling of weakness and nervous depression which the drug in full doses undoubtedly causes has been mistaken by clinicians for the more serious cardiac depression. Only in cases of distinctly weak heart is there any reason for fear of using the salicylates in very large doses, provided, as we said before, that care is exercised to prevent any possible accumulation in the system.

There is one very important contraindication to the use of salicylates which we have not seen much dwelt upon by writers, namely, chronic congestion or catarrh of the middle ear. The tinnitus aurium which salicylic acid produces has been proven to be the result of an intense irritative congestion of the middle and internal ear. A notable deafness is always present in persons who are fully under its action, and when the inner portions of the aural apparatus are diseased this deafness is greatly exaggerated. More important than the mere temporary inconvenience and distress which is produced in these cases is the liability of permanently intensifying the existing deafness. The circumstances must be very urgent which would warrant the exhibition of full doses of the salicylates to the victims of chronic aural lesions.

DIRECT ELECTRIZATION OF THE HEART.

THE conditions in which heart failure is a source of danger are so frequent, that any points bearing on the treatment must possess the greatest interest, especially since the fact that heart failure implies as a rule the impossibility or the difficulty of the introduction of drugs into the circulation, therefore their action on the nervous centres, and hence necessitates the direct action of our remedial agents on the heart itself; and here we are reduced either to the problematic action of external stimulants or the direct action of electricity on the heart. Thorough clinical studies of the action of electricity upon the heart are at present a desideratum: the evidence at hand is not sufficient to warrant any positive conclusion, but certainly is enough to stimulate further research, and it lies within the horizon of the possible that in the future direct electrical stimulation of the heart may be a recognized procedure in all cases of severe sudden heart failure such as occur in an anæsthesia. The direction of investigation at present should be toward the determination of the best methods of applying

the electricity to the heart and of the best currents to be employed.

Owing to the inaccessible location of the heart within the thorax, it is evident that the direct concentration of the current upon the heart is opposed by very considerable difficulties. This difficulty has been to a certain extent removed by a method suggested by Dr. J. Leonard Corning (*Virginia Medical Monthly*, April, 1886), of directly applying the electrical current through the heart. The means which he employs is as follows: He first sprays or brushes the pharynx with one-eighth per cent. solution of the hydrochlorate of cocaine. When he has satisfied himself by repeated trials that the reflex nausea^{is} is abolished sufficiently to admit the introduction of the handle of a spoon as far as the epiglottis, he first introduces an œsophageal electrode well insulated, except about one and one-half inches at the point, passing it down the œsophagus until the non-insulated extremity of the instrument lies behind the heart. This region lies between the seventh and ninth dorsal vertebræ, and the exact distance through which the electrode must be passed may be determined by measuring accurately from the eighth dorsal vertebra to the mouth. This electrode is then connected with one pole of the battery, while the other is connected with a flat electrode, which is placed over that portion of the anterior aspect of the heart not overlapped by lung (a triangle, whose apex is at the fourth left sternal articulation, extending downwards and outwards to the union of the fifth rib with its cartilage, and inwards and downwards to the sixth rib).

It is evident that this method will be much more successful in localizing the electric current on the heart than passing it directly through the body. Dr. Corning says that either the galvanic current or the faradic current may be used. It is evident, however, that there must be the greatest difference in the results of these two currents. For it was found by Ziemssen in his experiments on the direct electrization of the heart, in a woman in which that organ was entirely exposed, that the induced current was incapable of producing any modification of the heart rhythm when the strongest currents were passed through the auriculo-ventricular ganglia, the body of the ventricle or the apex. It would seem, therefore, that the faradic current can never be indicated in cases where electricity is desired as a heart stimulus. On the other hand, Ziemssen found that the constant cur-

rent was able to control with the greatest exactness not only the energy and form of contraction, but also the rhythm and frequency of cardiac pulsation. With sufficiently strong currents each irritation with a constant current is followed by a complete and perfect systole of both ventricles. It is thus seen that any desired frequency above the normal rate may be produced by using a corresponding rate of interruption, each ventricular systole, as determined by Ziemssen, even when produced as rapidly as one hundred and forty per minute, being strong enough to cause a perfect and strong pulse at the same rate of the radial artery. Again, Ziemssen found that a strong constant current passed without interruption through two points on the surface of the ventricle, one being on the left ventricle, two centimetres below the left auriculo-ventricular furrow behind the vertical branch of the coronary artery, the other on the right ventricle in the neighborhood of the phrenic nerve, the rate of pulsation is doubled or trebled, to return again to the normal rates as soon as the current is broken. From these results the hope is held out that by passing the interrupted galvanic current through the ventricles, according to the method of Dr. Corning, a heart which is nearly arrested in opium- or chloroform-poisoning, in suffocation, or in various other pathological conditions, might be restored to activity; and it should be remembered here that there is no advantage in using a strong current, for increasing the strength of the current does not increase the strength of the contraction, and a current which is strong enough just to influence the beat of the heart will be quite as efficacious as an extremely strong current, and will be less liable to produce other disturbances. Of course, the possibility must not be forgotten that the phrenic nerve will probably be included in the action of the current, but this will probably not produce any untoward effect.

Dr. Corning states that he has not yet had an opportunity of employing his method in poisoning or suffocation, but that he has been greatly impressed with the benefit derived from this treatment in cardiac weakness and tremor due to excesses and any conditions characterized by intermittent and irregular action of the heart. In such cases he has obtained the most advantage from the employment of the induced current, while, on the other hand, he states that angina pectoris is undoubtedly benefited by a constant galvanic current.

ON *HYDRASTIS CANADENSIS*.

IT is gratifying to note the gradual disappearance of the prejudice hitherto entertained in Europe against many new American remedies. True, there is a justification for such a reserve in face of a drug coming from a strange country with no other credentials than a loud praise from its manufacturing pharmacist. But it is different with a remedy which can boast of an exhaustively tested remedial value and a fair clinical record, as in the case of *hydrastis canadensis*. Some three to four years ago this remedy was in Germany utterly unknown, except with the journalistic and didactic element of the profession. At present we find the drug known, employed, and constantly rising in the estimation of our colleagues abroad. This assertion is based upon personal observations in Germany in 1883 and 1886.

Schatz deserved the credit of having first pleaded for the admission of the American medicament into gynecological practice, while Fellner, of the famous Franzensbad Springs, first subjected the drug to a rigid physiological examination in the laboratory of Prof. v. Basch in Vienna. It appears that this crucial test turned out entirely in favor of the drug, and, with this official but indispensable sanction, *hydrastis canadensis* will be regarded and received as an acquisition by our German *confrères*.

As could be expected, the fluid extract was the principal preparation tested. The results and conclusions of Fellner's researches have been published and abstracted in every German journal of note. The *Wiener Medizinische Blätter* of February 25, 1886 (No. 8) devotes an especial article to the subject. Let us now review the outcome of Fellner's experimental investigations.

The physiological action of the drug was found to vary according to the method of its exhibition, viz., injection into the external jugular vein, hypodermic application, and administration *per os*. Fellner formulates his principal conclusions as follows:

1. Large doses (90 to 135 grains) produce a great lowering of the blood-pressure and slowing of the pulse, followed by a rise of the pressure and quickening of the pulse, and an ultimate fall of pressure, with irregularity of the cardiac action and the pulse (bigeminus, trigeminus), arrhythmia, cardiac failure, and death.

2. Medium doses (15 to 45 grains) cause similar phenomena; the blood-pressure rises,

however, higher in the first stage and falls less deeply at the end of the second stage; the terminal symptoms, such as arrhythmia, etc., are wanting.

3. Small doses (1 to 5 subdivisions of a Pravaz syringe) increase the general blood-pressure.

4. Subcutaneous injection, enema, and application *per os*, even in large doses, act similarly to small doses injected directly into the veins.

From experiments instituted after section of the splanchnic nerves or of the cervical portion of the spinal cord, after compression of the abdominal aorta, and after section of the depressor nerve, and from experiments made under suspension of respiration simultaneously with strychnine injections, it became evident that hydrastis developed its principal effects in the vaso-motor nerve-centres, thus causing vascular contraction or dilatation. The pneumogastric nerves are also influenced by the drug, as was shown after their section by the absence of the slowing of the pulse, otherwise observable in the first stage.

Finally, the drug influences also the heart directly, or the nerve-centres situated in it, as seen by the mentioned cardiac arrhythmia.

Summing up the physiological effects of hydrastis, we must conclude that the drug is not only a vaso-motor poison but also a direct heart-poison.

Fellner examined also the influence of hydrastis upon the uterus, and found that after each injection of the drug into the external jugular vein the uterus appeared strongly injected simultaneously with the primary fall of the blood-pressure, and that during the subsequent rise of the pressure the uterine muscle, and often also the round ligament, presented a powerful contraction, and were completely ischæmic. The contraction and ischæmia of the organ continue as long as the high pressure persists. The movements of the uterus were transferred to a kymographion and registered. After each injection of hydrastis the apparatus showed the contractions of both fundus and the horns. The maximal effect was obtained with the first rise and fall of arterial pressure, though contractions, especially in the horns, set in later.

Besides the fluid extract, Fellner examined also two alkaloids of hydrastis and their salts, viz., berberine and the phosphate of berberine, and the muriate of hydrastine. These preparations produced likewise very energetic uterine contraction.

Though with us the high usefulness of

golden seal has long been an established fact, the above credentials bestowed upon the remedy after the vigorous examination in the Vienna laboratory will naturally tend to increase our estimation of the drug and the popularity it now enjoys.

In conclusion, we have to mention the favorable results obtained with the fluid extract of hydrastis by Dr. Shiwopezew, of Moscow, as published in the *Medicinskoje Obosrenje*, No. 14, 1885. This physician describes eight cases of metrorrhagia (in metritis and endometritis), and of excessive menstrual discharges, in which the fluid extract was given in 20-drop doses four times daily with very satisfactory results. In two cases of metrorrhagia caused by fibromata, and a case of a uterine carcinoma, the remedy failed, while in every other case, where the bleeding was the result of inflammatory conditions of the parts, the exhibition of golden seal proved a success.

This author emphasizes also the remarkable beneficence which the drug impressed upon the tone of the digestive apparatus. He noted that under its use the dyspepsia, the usual incumbent of uterine disease, disappeared, and does not hesitate to confer the epithets of a tonic and a digestive upon hydrastis canadensis.

HOPEINE.

IN our April issue we called attention to what seemed to be an attempted fraud in putting on the market, under the name of hopeine, what was practically nothing but morphine, and the view which we then took has since been greatly strengthened by the account of the analyses published in the *Pharmaceutical Journal and Transactions* for April 7, 1886, by Dr. B. J. Paul. He also found that the so-called hopeine was so closely analogous to morphine that, if not identical with it, there was no possibility of distinguishing one from the other in comparative trials. Williamson, the discoverer of this so-called alkaloid, himself acknowledged the similarity of the two bodies after the fact had been proved by other observers, and attempted to explain it by the statement that there was also present in hops, together with this alkaloid hopeine, another alkaloid isomeric with morphine. Now, it would seem from Dr. Paul's results that the hop plant not only contains hopeine and morphine, but also cocaine, for he has found that thirty per cent. of this alkaloid "hopeine" corresponded in

every respect with a good sample of cocaine. It also presented the physiological character of cocaine, producing numbness of the tongue. When boiled with water, it was converted into a fine crystallizable substance,—that is, a product of the decomposition of cocaine in that way; then by boiling for two or three minutes with a small quantity of caustic potash, it was decomposed with the formation of benzoic acid, and, on addition of hydrochloric acid, benzoic acid was separated. This test for cocaine is under certain limitations decidedly characteristic. The general result at which Dr. Paul arrives is, that the greater part of the substance of hopeine is really morphine, and that if it be not morphine obtained from opium, it is so like morphine derived from that source as to be undistinguishable from it. Therefore, if the discoverer's account of it be correct, we must suppose that hops as well as opium contain morphine, although trials made with hops grown in England and other parts of Europe have in common no results showing the presence of morphine. As Dr. Paul puts it, we have to adopt one of two alternatives in this matter,—“Either in the wild hop of America there is a remarkable association of two alkaloids known to occur in two extremely different plants, or we have a case of an article improperly put forward as a substance of natural origin, though really a fictitious mixture.” We leave to our readers to decide which of these two alternatives is the more probable. In the discussion which followed the reading of this paper before the Pharmaceutical Society, two of the members stated that, although they had not absolutely proved it, they were confident that hopeine also contained a trace of atropine, while still another, in giving possibly the strongest testimony as to the nature of this substance, stated that he had been informed that day that the office of the company which had brought forward this substance was closed.

ON TUBERCULOSIS OF THE ORAL MUCOUS MEMBRANE.

THOUGH, according to our present views, the tubercular infection may seize upon any organ or part of the system, there are some few localities in which hitherto no tubercular lesions have been found, or, possibly, have not been recognized as such. The crucial test of discovering the tubercle bacillus

would, of course, preclude at present any diagnostic error. On the other hand, it would be scarcely justifiable to deny the tubercular character to a neoplasm on the ground that no tubercle bacilli have been found in it, for every microscopist knows how difficult the detection of the bacilli is in the chronic tubercular processes, in which but a few microbes at best are detectable. Still, it is claimed that, with a certain ample experience, this detection is feasible in every case.

In the *Wiener Med. Bl.*, No. 8, 1886, we find a discussion of several cases of tuberculosis of the mucous membrane of the mouth. One of the cases, all which leave no doubt as to the correctness of the diagnosis, is an especially interesting one. A man suffered from tuberculosis of the lungs, and, as usually, succumbed ultimately to this affection. A tubercular ulcer on his gum proved the medium of propagation of the affection from husband to wife. A few years after the man's death the widow noted the appearance of an ulcer on her lips, which proved to be of a tubercular nature. Direct infection through kissing was in this instance the evident source of this ulcer. After all therapeutic interferences (including cauterization with lactic acid) had proven useless, the ulcer was cauterized with the Pacquelin cautery and disappeared.

The following case, observed by Prof. Petersen in Kiel, is likewise interesting. The patient, a man of 65 years of age, presented a very cachectic appearance and obvious symptoms of phthisis. Some years ago the man had at the tip of his tongue an ulcer,—a cancer, according to his own expression,—which was extirpated and never returned. At the time of presentation the man showed on the mucous membrane of his left cheek a rifted ulcer of the size of a five-cent piece, with a hard base and irregular thickened margins. No nodes could be detected, and no pain was experienced in the ulcer, which had existed for about half a year, and grew very slowly. The appearance and origin of the ulcer and the cachexia of the patient spoke in favor of the diagnosis of carcinoma, while the existing phthisis and the previously extirpated ulcer of the tongue awakened the suspicion of tuberculosis. There was no clinical way to establish the correct diagnosis, but the extirpated and hardened ulcer revealed on a microscopic bacteriological examination its true nature, viz., that of tuberculosis.

Syphilis and carcinoma comprise the principal possibilities of diagnostic erring in the

case of oral tuberculosis. In the former case, as Hansemann aptly remarks in a recent issue of *Virchow's Archiv*, it matters little to the patient whether the extirpated growth is of a carcinomatous or of a lupous tubercular nature, while in the latter perverted therapeutics will probably make mischief. On the other hand, a timely recognition of the tubercular nature of the growth, if originating primarily and still localized, may suggest a medication not altogether void of good prospects. Hansemann quotes four cases of oral tuberculosis, all diagnosed properly *intra vitam* by microscopic examination after an explorative operation. This procedure must after all be regarded as the only infallible way to gain the right diagnosis. Age and cachexia are anything but reliable diagnostic guides, for carcinoma may exist without and syphilis with a cachexia, and besides, syphilis is also found at an advanced age.

WHY MR. LAWSON TAIT IS OPPOSED TO VIVISECTION.

A PLAUSIBLE explanation of Mr. Lawson Tait's well-known passionate opposition to vivisection is suggested by Professor F. Winckel in the introductory chapter of his recent excellent text-book on the "Diseases of Women" (*Lehrbuch der Frauenkrankheiten*, Leipzig, 1886).

Professor Winckel raises a voice of warning against laparotomy as a panacea for all the diseases of women. Ovarian tumors and uterine fibroids have ceased to be the only indications for laparotomy. Tubal enlargements, ovarian neuralgia, adhesions of the pelvic viscera, displacements of the uterus, such as retroflexion, prolapse, inversion, have been proposed and accepted as indications for abdominal section. It is possible to go still further, and say that when women suffer from pains in the pelvis, through a considerable period of time, which are not very soon alleviated by ordinary means, the gynecologists resort at once to laparotomy.

"A sadder proof of this statement cannot be adduced than the list of normal castrations presented by Lawson Tait before the International Medical Congress in London, August, 1881. This is really the same thing as to practise animal experimentation upon the living woman, and, therefore, it is not at all remarkable that Lawson Tait is such an energetic opponent of vivisection."

Reports on Therapeutic Progress.

THE TREATMENT OF NASAL AND NASOPHARYNGEAL CATARRH.

DR. J. SOLIS-COHEN (*New York Med. Journ.*, April 3, 1886) believes that the two great principles in the treatment of nasopharyngeal catarrh are to keep the parts clean, so as to let them have a chance to get well by themselves, and to take care of the patient's general health; and he believes that this plan will give quite as satisfactory results as when boring, cutting, snaring, and electric cauterization are practised.

The plan he has long used for getting at concealed parts for the purpose of cleansing them, and for the purpose of making any local applications that may be necessary, is to take a small piece of compressed sponge, cut it very thin, moisten it, and place it between the septum and the turbinated bones. The patient sits awhile with this sponge in position, so that, by compression as it imbibes moisture, it is possible to reduce the swelling of the tissues, and thus get a considerable passage for further manipulation. Through the passage thus gained he then uses compressed laminaria tubes, the same kind as are used for dilating the neck of the uterus. These are employed for the purpose of exercising as equable compression on the parts as possible, on exactly the same principle that one exercises pressure by bandaging. They are first to be softened in water, and then to be flattened from side to side, so that they shall become adapted to the shape of the passages. Of course, the size is to be regulated in accordance with the size of the passage. The tent or tube is then allowed to dry after having been flattened, and of course it becomes much smaller. When it is desired to use the tube, after having made a little start in dilating the passage with the compressed sponge (or, in suitable cases, without using the compressed sponge), the tube is greased well with cosmoline, inserted into the passage with the string outside, so that it cannot get loose, and the patient allowed to wear it for an hour or so, according to circumstances. Every half-hour the patient moves the tube a little, and this testing is continued until there is some difficulty in the removal, and then it is withdrawn entirely. It is necessary for this to be done promptly, because these tubes swell up so behind the compressed parts, if left too long, that there may be a great deal of difficulty in removing

them, and so much unnecessary pain be produced. Therefore, just so soon as there is any difficulty in removing them, they have to be taken out. This manipulation is repeated from day to day, and just as soon as the patient has learned it, as he readily does, he does it daily at home. After the first two or three times this compression goes on a great deal better, and then with the sprays, douches, washes, or what not, the parts are cleansed, and, if necessary, other applications made to the surfaces as may seem proper. In the treatment of naso-pharyngeal catarrh where there is a good deal of secretion, the syringing is done partly through the nose and partly through the mouth. Dr. Cohen thinks usually you can wash those parts as well through the nose as through the mouth. But the great point is the cleansing of the parts from the secretions and keeping them clean, for the same reason that one would keep the teeth clean. It sometimes consumes a great deal of time. He has often, in the first interview with the patient, occupied an hour in getting the parts cleansed. The parts must be examined from time to time anteriorly and posteriorly to make sure they are cleansed. Once thoroughly cleansed, the treatment consists in keeping them clean. He has had patients who have told him their malady was of forty to forty-five years' standing, and who have been relieved and have remained relieved for a number of years. Of course exacerbations take place.

A SIMPLE METHOD OF ARTIFICIAL RESPIRATION.

The desideratum at which we aim in artificial respiration is to obtain a method of as simple a character as possible, so that it may be readily understood by the laity, and at the same time should possess the maximum efficiency. The main indications in artificial respiration are: first, to loosen clothing, braces, etc., so as to allow free movement of the chest and prevent constriction of the neck; second, to bring the trachea, larynx, and pharynx as nearly as is anatomically possible into a straight line with the openings of the mouth and nose; third, to obtain as deep an inspiration as possible by elevating the ribs and depressing the diaphragm; and, fourth, to get a deep expiration. Now, although the accepted modes of restoring respiration have proved very successful in trained hands, yet they are almost unknown to the general public, and all require a certain

amount of skill, which cannot always be looked for at the hands of the laity. MR. JOHN ARTHUR FRANCIS proposes, in the *British Med. Journ.*, March 20, 1886, a plan which he believes combines all the advantages, without the disadvantages, of the methods generally employed, besides possessing great simplicity. It is as follows: The body, having been laid on the back, and with the clothes loosened and the mouth and nose wiped out, two bystanders should pass a narrow lever of any kind under the body at the level of the waist, and raise it till the tips of the fingers and the toes of the subject alone touch the ground; count fifteen rapidly; then lower the body flat to the ground, and press the elbows to the sides hard; count fifteen again; then raise the body again for the same length of time; and so on, alternately raising and lowering. The head, arms, and legs are to be allowed to dangle down quite freely when the body is raised. A child can easily be manipulated by one person with a hand under each loin. For an adult, the best way is for two persons to grasp each other's right hand under the body, and then raise it. A stout walking-stick or umbrella would be efficacious, where the operators were too weak to lift up the patient with one clasped hand. To join both left and right hands with those of another person would probably form too great a plane for the body to rest on, except in the case of a very tall patient, and prevent the full extension of the spine.

THE OPERATIVE TREATMENT OF FACIAL NEURALGIA.

DR. GEORGE R. FOWLER publishes in the *Annals of Surgery*, April, 1886, an elaborate paper on the above subject, from which he draws the following conclusions, as embodying the result of the experience of surgeons up to the present day:

1. Neuralgias of the fifth cranial nerve, of peripheral origin, which have resisted methods of treatment other than operative, may be expected to yield to the operation of neurectomy of the trunk or trunks whose branches are distributed to the painful area. In this class of cases the neurectomy should be carried, if possible, to the point at which the nerve makes its exit from the cranium.

2. Cases of central origin should be first submitted to a limited neurectomy, conjoined with nerve-stretching, in the hope that the process of degeneration thus set up, together with the rest gained by interrupting the cen-

The largest number of reported cases of intubation of the larynx for pseudo-membranous laryngitis have been performed by Dr. F. E. Waxham, of Chicago, who has had seventeen cases with eight recoveries; Dr. Dillon Brown reports fifteen cases with four recoveries; Dr. E. F. Ingalls, two cases, both fatal; and Dr. W. P. Northrup, one successful case. In addition to these, Dr. A. B. Strong has employed the method with success in one case of acute catarrhal laryngitis.

These are all the published statistics which the editor of *The Medical Record* (April 24, 1886) has been able to discover in a somewhat hasty search, and, excluding the case of catarrhal laryngitis, we have thirty-five operations with thirteen recoveries, or slightly over thirty-seven per cent., certainly a very favorable showing, when we consider that nearly one-half of the cases were foundlings, and many of them infants.

If now we turn to the results of tracheotomy we find a smaller percentage of recoveries, taking the statistics of a hospital and private practice together, as has been done in the case of intubation. Gay states that of two hundred and six cases of tracheotomy performed for croup in the Boston City Hospital during twenty years there were sixty-five recoveries, about thirty-one per cent., and in his own practice he has had twenty-nine recoveries in eighty-six operations, nearly thirty-four per cent. Of seventy-seven cases operated upon during the year 1885, in the same institution, Lovett states that twenty, or nearly twenty-six per cent., recovered. These results are not very different from those formulated by Agnew in a study of upward of eleven thousand cases, and we may therefore assume the average percentage of recoveries after tracheotomy to be not far from thirty, although Solis-Cohen is disposed to regard the operation in a less favorable light, notwithstanding his own brilliant series of successes.

We thus find that Dr. O'Dwyer's method already compares very favorably with tracheotomy as regards the saving of life, while certainly, to consider it from an æsthetic point of view, it is much to be preferred. It is, however, too soon to pronounce absolutely upon its merits, for the figures are too small and the operators too few to serve as anything more than an encouragement for further trials. It is only after a method has become in a measure popularized, and the number of cases has mounted into the hundreds, that we can form an adequate judgment of its worth. But if

intubation of the larynx proves itself to be as valuable as these first essays would lead us to hope, it will be accounted one of the great advances in this age of medical discoveries, and we may only wish that such will be its fate.

IODIDE OF SODIUM VERSUS IODIDE OF POTASSIUM.

The disadvantages attending the employment of the iodide of potassium have long been noticed and commented upon in England; but, probably from the fact that the other iodides have never come into anything like general use here, these disadvantages have been supposed to result from the exhibition of an iodide as such, and therefore likely to follow the administration of iodides of other bases than potassium. The subject has, however, been taken up and studied of late in a more scientific manner, especially abroad, and we are thus enabled to judge on other than empirical grounds the relative advantages of the different iodides.

The object with which any drug is given is, or should be, the relief of certain definite symptoms; but it need scarcely be remarked that no drug, so far as one is enabled to judge, ever corresponds so exactly to any particular morbid condition as to cover that particular pathological area and no more. The effect of the drug overlaps the diseased area, so to speak, and produces, or is apt to produce, a train of symptoms not only unnecessary and undesirable, but oftentimes positively injurious. Now, when iodide of potassium is given in any beyond quite small doses—and large doses have lately been recognized as indispensable to the relief of many cases where no improvement has been effected by the smaller doses—various troublesome consequences are to be noticed, first among which is an extreme depression. We may here recall the well-known fact that potassium, and all salts into the composition of which it enters, exert this depressing influence, lowering the blood-pressure and slowing the heart. So marked is this action on the heart that large doses (1 ounce and upwards) would probably cause dangerous, if not fatal, syncope, were it not for the fact that its emetic action is so far constant in these doses as to obviate the risk of its being absorbed in quantities sufficient to show its power in this direction. The depression, nevertheless, is always present to some extent, and must often be undesirable. Sodium and its salts are comparatively exempt from this ill effect; and, there-

fore, *ceteris paribus*, the use of the sodium iodide is indicated wherever we think proper to employ large doses of an iodide, or where the state of the patient is such as to render further depression unadvisable. In support of the argument that the depression is the effect of the salt, as a potassium compound and not as an iodide, the following experiments may be adduced. When muscular tissue is cut out of the living body and placed in a two or three per cent. solution of a potassium salt, the chloride, for example, the muscular fibres immediately lose their irritability. If this exposure to the potassium salt be not continued for too long a time, immersion in a solution of sodium chloride will restore to the muscle its irritability. Further, if healthy muscular tissue on removal from the living body be immersed in a solution of chloride of sodium, its irritability will be preserved for a much longer period than if it be immersed in pure water (Kühne). The salt-frog, common in the physiological laboratory, is a practical instance of the stimulating action of solutions of sodium chloride upon the living animal tissue.

Second in the list of inconveniences following the employment of iodide of potassium comes the collection of symptoms, catarrh of the conjunctival, naso-pharyngeal, and respiratory mucous membranes, and headache, known as iodism; and this is not uncommonly accompanied by catarrh of the gastro-intestinal mucous membrane, giving rise to epigastric pain and discomfort, dyspepsia, and diarrhoea. An analytical study of the physiological effect of the drug will show that the catarrh of the gastro-intestinal mucous membrane is probably due to the potassium of the salt, which produces the effects alluded to above, on coming into contact with the muscular walls of the stomach during absorption. For this reason, the drug will often be tolerated if the precaution be taken to give it largely diluted with an alkaline mineral water. The coryzal symptoms are probably due to the iodine component of the salt; it is only of minor importance so far as the general health of the patient is concerned, and is variously accounted for by different authorities. The only theory as to its etiology which we shall mention is the one advocated in the latest edition of Nothnagel and Rossbach. According to these authorities, the catarrh of the nasal and respiratory mucous membranes occurs only when either free iodine is used externally together with the iodide of potassium internally, or when the potassium iodide which

is used is impure from the presence of some free iodine; in either case, it is the direct irritation of the free iodine, either in the process of excretion or when inhaled as a vapor, which causes the catarrh. If this be so, these effects will be avoided by care being taken to administer a pure potassium or sodium iodide. What has been said as to the cause of the catarrh will hold good for the eruption also; the latter is the external manifestation of an irritation of the integument, just as the former is of irritation of the mucous membranes.

We are ignorant, it is true, of the exact mode of action of the iodides, and of the iodide of potassium in particular; our employment of it is empirical, and we are reduced to the vague designation of "specific" to describe its therapeutical effect. If this be the case in speaking of its action in cases of tertiary syphilis, how much more applicable is it when employed as an "alterative" or "resorbent," where its *modus operandi* can scarcely be guessed at. Be this as it may, whatever effect can be attributed as a "specific" to iodide of potassium can probably with equal justice be credited to the other iodides, and particularly to iodide of sodium; while, as we have endeavored to show, the inconvenience resulting from the employment of an iodide in large doses, is minimized by the substitution of sodium for potassium salts. The same remarks apply with few reservations to the analogous salts of bromine. Such authorities as Nothnagel and Rossbach assert that they have used the sodium iodide almost exclusively for some years past where the drug had to be given for a long time, with results equal to those obtained from the iodide of potassium; and Dr. H. W. Berg, of New York, has used it with similar good results in cases of pregnant women under the influence of syphilis.

To sum up, then, we may claim for sodium iodide that (1) it can be used therapeutically for almost all, certainly the chief, purposes for which potassium iodide is used, and with similar beneficial results; (2) that sodium iodide is more assimilable than the iodide of potassium, both locally to the digestive organs and to the general system; (3) that, as a result, many of the local and general undesirable effects which are produced by the potassium iodide do not follow the use of the sodium iodide. It is to be hoped, therefore, that the sodium iodide will be used by those whose clinical advantages allow an extensive trial of the drug, so that a more extended ex-

The largest number of reported cases of intubation of the larynx for pseudo-membranous laryngitis have been performed by Dr. F. E. Waxham, of Chicago, who has had seventeen cases with eight recoveries; Dr. Dillon Brown reports fifteen cases with four recoveries; Dr. E. F. Ingalls, two cases, both fatal; and Dr. W. P. Northrup, one successful case. In addition to these, Dr. A. B. Strong has employed the method with success in one case of acute catarrhal laryngitis.

These are all the published statistics which the editor of *The Medical Record* (April 24, 1886) has been able to discover in a somewhat hasty search, and, excluding the case of catarrhal laryngitis, we have thirty-five operations with thirteen recoveries, or slightly over thirty-seven per cent., certainly a very favorable showing, when we consider that nearly one-half of the cases were foundlings, and many of them infants.

If now we turn to the results of tracheotomy we find a smaller percentage of recoveries, taking the statistics of a hospital and private practice together, as has been done in the case of intubation. Gay states that of two hundred and six cases of tracheotomy performed for croup in the Boston City Hospital during twenty years there were sixty-five recoveries, about thirty-one per cent., and in his own practice he has had twenty-nine recoveries in eighty-six operations, nearly thirty-four per cent. Of seventy-seven cases operated upon during the year 1885, in the same institution, Lovett states that twenty, or nearly twenty-six per cent., recovered. These results are not very different from those formulated by Agnew in a study of upward of eleven thousand cases, and we may therefore assume the average percentage of recoveries after tracheotomy to be not far from thirty, although Solis-Cohen is disposed to regard the operation in a less favorable light, notwithstanding his own brilliant series of successes.

We thus find that Dr. O'Dwyer's method already compares very favorably with tracheotomy as regards the saving of life, while certainly, to consider it from an æsthetic point of view, it is much to be preferred. It is, however, too soon to pronounce absolutely upon its merits, for the figures are too small and the operators too few to serve as anything more than an encouragement for further trials. It is only after a method has become in a measure popularized, and the number of cases has mounted into the hundreds, that we can form an adequate judgment of its worth. But if

intubation of the larynx proves itself to be as valuable as these first essays would lead us to hope, it will be accounted one of the great advances in this age of medical discoveries, and we may only wish that such will be its fate.

IODIDE OF SODIUM VERSUS IODIDE OF POTASSIUM.

The disadvantages attending the employment of the iodide of potassium have long been noticed and commented upon in England; but, probably from the fact that the other iodides have never come into anything, like general use here, these disadvantages have been supposed to result from the exhibition of an iodide as such, and therefore likely to follow the administration of iodides of other bases than potassium. The subject has, however, been taken up and studied of late in a more scientific manner, especially abroad, and we are thus enabled to judge on other than empirical grounds the relative advantages of the different iodides.

The object with which any drug is given is, or should be, the relief of certain definite symptoms; but it need scarcely be remarked that no drug, so far as one is enabled to judge, ever corresponds so exactly to any particular morbid condition as to cover that particular pathological area and no more. The effect of the drug overlaps the diseased area, so to speak, and produces, or is apt to produce, a train of symptoms not only unnecessary and undesirable, but oftentimes positively injurious. Now, when iodide of potassium is given in any beyond quite small doses—and large doses have lately been recognized as indispensable to the relief of many cases where no improvement has been effected by the smaller doses—various troublesome consequences are to be noticed, first among which is an extreme depression. We may here recall the well-known fact that potassium, and all salts into the composition of which it enters, exert this depressing influence, lowering the blood-pressure and slowing the heart. So marked is this action on the heart that large doses (1 ounce and upwards) would probably cause dangerous, if not fatal, syncope, were it not for the fact that its emetic action is so far constant in these doses as to obviate the risk of its being absorbed in quantities sufficient to show its power in this direction. The depression, nevertheless, is always present to some extent, and must often be undesirable. Sodium and its salts are comparatively exempt from this ill effect; and, there-

fore, *ceteris paribus*, the use of the sodium iodide is indicated wherever we think proper to employ large doses of an iodide, or where the state of the patient is such as to render further depression inadvisable. In support of the argument that the depression is the effect of the salt, as a potassium compound and not as an iodide, the following experiments may be adduced. When muscular tissue is cut out of the living body and placed in a two or three per cent. solution of a potassium salt, the chloride, for example, the muscular fibres immediately lose their irritability. If this exposure to the potassium salt be not continued for too long a time, immersion in a solution of sodium chloride will restore to the muscle its irritability. Further, if healthy muscular tissue on removal from the living body be immersed in a solution of chloride of sodium, its irritability will be preserved for a much longer period than if it be immersed in pure water (Kühne). The salt-frog, common in the physiological laboratory, is a practical instance of the stimulating action of solutions of sodium chloride upon the living animal tissue.

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perience may confirm that which a limited experience seems to claim for this drug.—*British Med. Journ.*, April 17, 1886.

*SYNCOPE AS A CAUSE OF ASPHYXIA
NEONATORUM, AND ITS
TREATMENT.*

DR. GEO. H. NOBLE (*Amer. Journ. of Obstetrics*, April, 1886) believes that anæmia of the brain is in nearly all cases the cause of asphyxia neonatorum, and that, therefore, inversion of the child, by which means the blood tends to gravitate to the brain, will in many cases serve to restore children to life which are apparently dead, and in which artificial respiration will ordinarily fail. He therefore recommends the inversion of the child, or, in other words, placing the head lower than the body, and claims for it the following advantages :

1. It enables one to employ any other method in connection with it.
2. It is totally void of violence,—a matter well worthy of consideration. Violent or prolonged artificial respiration works much detriment, and may even fan out the last spark of life.
3. It induces the escape of such fluids as may be in the air-passages,—a matter of prime importance, especially in cases of intra-uterine respiration.
4. Where there is a circulation of blood through the foramen ovale, it substitutes the purer blood of the vena cava ascendens for the venous blood of the vena cava descendens.
5. It gravitates the blood to the lungs, which, there distending the blood-vessels, causes additional stimulus to respiration.

*INHALATIONS OF COLD AIR IN ENTERIC
FEVER.*

In the beginning (*London Med. Record*, March 15, 1886) of his work, DR. ALEXANDER M. SOKOLOFF, of the Krasnoselsky Military Hospital, makes an interesting observation (*Voëno-Medits. Jour.*, February, March, May, June, and July, 1885, and the *St. Petersburg Inaugural Dissertation*, 1884, p. 116) that though typhus patients at this hospital in summer-time are kept in tents, where during August and September the temperature by nights sometimes falls as low as $+6^{\circ}$ C., and even 0° C.; and though under these circumstances the temperature of the patients in many cases falls from the evening height of 40° C. to the

normal in the next morning, he has never seen anything like dangerous collapse or other complications. Starting from this observation, the author justly remarks that dry cold air as a therapeutic agent has not, as yet, attracted the due attention of medical men, in spite of the recommendations made by Hahn, Rosenthal, Senator, Kaczorowski, Langenbeck, and P. Niemeyer. Meanwhile, the statements of the authors named recently found a confirmation in the careful experiments made by Dr. L. R. Trautenberg, in Professor V. A. Manassein's clinic. Dr. Trautenberg, however, while admitting the therapeutic value of cold-air baths, at the same time has pointed out that they—as an antipyretic—occupy a lower level comparatively with cold-water baths.

Searching for some means of intensifying the antipyretic action of cold air, Dr. Sokoloff resolved upon undertaking a series of experiments on inhalation,—that is, on introducing this cooling agent directly into the lungs, into “one of the regions of maximal heat-formation.” His observations were made in twenty-three cases of enteric fever, five of which were of an abortive type, the remaining eighteen being moderately or very severe (two ended fatally). The patients were made to inhale from a Niemeyer's cold-air inhaler, slightly modified by the author. About five hundred and ten inhalations were made in twenty-three cases, the number of sittings in an individual case varying from six to forty-two; the number of sittings daily from one to three; the duration of a sitting from five to thirty minutes; and the temperature of the air from -2° to -10° R (27.5 to 10.5° F.). From these observations the author draws the following conclusions :

1. Inhalations of cold air produce a greater or less depression of febrile temperature; but, contrary to the author's expectations, their effect is comparatively weaker and more fleeting than that of cold-water baths, and even of cold-air baths. The antipyretic effect of the inhalations varies according to certain conditions.
 - a. *The time of the day.*—The least decrease of the febrile temperature, varying from 0.2° to 0.5° C., is observed when the inhalations are made between noon and 6 P.M. The strongest effect, varying from 0.5° to 1.3° C. (after a single sitting), is observed between 7 P.M. and 10 P.M.
 - b. *The stage of the disease.*—The slightest and shortest effects are observed during the first two weeks of enteric fever, when the average daily decrease (after several sittings) falls short of 1° C., and when the effect of an individual sitting does not

last longer than one and a half to two hours. During the next weeks of the disease the effects are stronger (often 1° C., after a sitting), and last several hours. *c. The duration of the inhalation* is of but slight importance. A sitting of five to ten minutes' duration gives the same decrease of the febrile temperature as a sitting of twenty minutes' duration. The author attempts to explain this rather strange circumstance by fatigue of the lungs, in consequence of which the patient makes accelerated and superficial respiratory movements. At all events, the greatest antipyretic effects are obtained from sittings of twelve to fifteen minutes' duration. *d. The temperature of the air inhaled.*—A temperature of -2° or -3° R. gives almost the same decrease of the febrile temperature as the temperature of -4° , -5° , or -6° R. Relatively stronger effects are obtained from temperatures of -8° , -9° , or -10° R. It would seem natural to expect *a priori* that the antipyretic effect ought to be greater the lower is the temperature of the air inhaled. It proved, however, otherwise. The relatively small effect of lower temperatures is attributed by the author to a comparatively shorter duration of the sittings, the patients being unable to perform prolonged inhalations on account of unbearable toothache occurring in consequence of intense cooling of the mouth and teeth. *e. The mental state of the patient.*—Both depression and excitement (often observed in typhus patients) diminish or even entirely suppress the antipyretic effect of the inhalations.

2. The inhalations produce retardation of respiration (in average, four a minute) and pulse (in average, six beats a minute). At the same time, breathing becomes deeper and the pulse fuller.

3. The inhalations relieve dryness of the mucous membranes and skin.

4. Inhalations of cold air promote resolution of the bronchitis which often complicates enteric fever, and increase the process of ventilation in the lungs.

5. Hence the inhalations lead to an improvement in the patient's general state, sleep, and appetite.

6. Inhalations of cold air act antiphlogistically on the inflamed respiratory tracts, and hence may be employed as a rational therapeutic agent in the treatment of pulmonary inflammation.

7. Systematic inhalations of cold air may prove of use also in chronic bronchitis, asthma, and emphysema.

TREATMENT OF OBSCURE FORMS OF METRORRHAGIA.

At a meeting of the Harveian Society, held April 1, 1886, DR. ARTHUR W. EDIS read a paper on the treatment of obscure forms of metrorrhagia (*Lancet*, April 10, 1886). He urged the importance of regarding hemorrhage merely as a symptom of some constitutional or local disorder, and not as a disease or entity *per se*. It was a conservative effort of nature in many instances to lessen the arterial tension and prevent the occurrence of more serious internal hemorrhages. A correct diagnosis was the first and most important element of successful treatment, for until the former be known the latter is mere guesswork, and we are as liable to do harm as good in attempting to repress the hemorrhage. The principle of diagnosis by exclusion was one which approved itself to many,—determining, in fact, to what cause the hemorrhage was not due. This could only be done by knowing beforehand what were the most likely causes of severe hemorrhage,—the *possibilities*, so to speak, and then eliminating one after the other until we have left only two or more *probabilities*. Before concentrating attention upon the probable local disorder, the possibility of some complicating constitutional condition, whether cardiac, renal, or hepatic, should always be considered. A clear and concise history of the attack was of great importance in attempting to arrive at a correct diagnosis. Then, again, the color and consistence of the discharge should be noted: whether bright or dark, fluid or clotted, recent or disintegrated. The duration of the flow, interval between the losses, influence upon the general health, and other similar considerations, should not be passed over. Unsuspected miscarriages and incomplete abortions proved a not inconsiderable percentage of these obscure cases. Some of the most difficult cases to diagnose occurred at or about the so-called climacteric period. Exploration of the interior of the uterus, either by dilating or excising the cervix, should always be resorted to where no sufficient outside cause for the hemorrhage could be detected. Cases illustrating the difficulty of forming a correct diagnosis were given, and the lines of treatment sketched out.

THE ALKALOIDS OF LOBELIA INFLATA.

The discovery of a second alkaloid in the leaves of lobelia inflata has been an indirect result of an examination of the lobelia nicotianæfolia, a plant growing in the mountain

ranges of the Madras peninsula and Ceylon. One of the Mahratta names of the latter plant is "the tubular poison plant," and an infusion of its leaves is said to be used by the natives as an antispasmodic. It is mentioned in the Indian Pharmacopœia, and Dr. Dymock, in his "Vegetable Materia Medica of India," says that the leaves resemble tobacco, and that the dry herb, when handled, is extremely acrid, the dust irritating the throat and nostrils. As nothing was known concerning the active constituents of this drug, its examination was undertaken in the University of Dorpat by HERR VON ROSEN, who reports (*Thesis*) that he has isolated from lobelia nicotianæfolia two alkaloids,—one a liquid, and corresponding with the reported properties of lobeline from lobelia inflata, and the other a crystalline solid, soluble in chloroform, and difficultly soluble in water, the chemical properties of which are under investigation. Herr von Rosen was therefore induced to make similar experiments on lobelia inflata, and succeeded in separating from that drug also both the liquid and the solid base. The results of some pharmacological experiments made with lobeline hydrochlorate, prepared by Herr von Rosen from the two plants, a commercial sample of lobeline sulphate, and that solid alkaloid from the two plants, showed that they corresponded completely in their action, which resembled apomorphine in its emetic character.—*Pharm. Journ. and Trans.*, April 3, 1886.

*THE INFLUENCE OF KAIRIN, THALLIN,
HYDROCHINON, RESORCIN, AND ANTI-
PYRIN ON THE HEART AND
BLOOD-VESSELS.*

It is through the agency of the blood-vessels and the blood which circulates within them that not only the temperature of the various organs of the body is constantly being equalized, but also that the superabundant heat is thrown off. As is well known, the constant or normal temperature peculiar to animals depends upon the maintenance of a proper balance between the amount of heat generated within the organism and the amount given off to the surrounding medium through the agency of the blood-vessels of the skin, the lungs, etc. Thus, when heat-production is feeble, and the temperature of the surrounding medium low, the cutaneous vessels will be found contracted, and the amount of blood which flows through them in a unit of time will consequently be relatively small. On the other

hand, these vessels will be found dilated, and an abundant flow of blood take place through them, when heat-production is increased and the temperature of the surrounding medium is high. Hence, it is evident that any interference with this important function of the circulatory apparatus must necessarily greatly influence the temperature of the body, and anything tending to lower the tone of the blood-vessels, or weaken the heart's action, at once deprives the organism of its most effective means for heat regulation. In the condition known as fever, the temperature peculiar to the animal, or its normal temperature, exists no longer, and in place of it we find a higher one. All the drugs named at the head of this article have been found to reduce the abnormal temperature to a greater or less degree, and yet until now there has been made no detailed series of experiments as to the influence of these remedies on the circulatory apparatus.

It is evident that in the explanation of the action of these drugs, such as antipyretics, this point must first be considered, and conclusions, which must be of the greatest value, may be drawn from the experiments published by DR. H. G. BEYER in the *Amer. Journ. Med. Sci.*, April, 1886. His experiments were made on the frog and terrapin, and he studied the action of the drug on the isolated heart and on the blood-vessels. His results may be formulated about as follows :

I.

1. Kairin produces dilatation of the capillaries and veins, which dilatation much exceeds that of the arterioles, which latter is sometimes preceded, sometimes followed, by an abnormal contraction.

2. It causes a slight acceleration in the current in the arterioles and a slowing of the flow in the small veins.

All the experiments made with kairin on the heart (nine in number) show the great weakening effect it exerts upon the contracting power of the cardiac muscle.

3. Kairin has a destructive influence upon the hæmoglobin of the red blood-globules, and arrests the movements of the white corpuscles. From the results of these experiments, it is quite clear that kairin reduces temperature, both by diminishing heat-production and by increasing heat-radiation. The distinctive influence it exerts on the red blood-corpuscles, however, and the weakening effect upon the heart, render its employment objectionable and dangerous.

II.

1. Thallin, in comparatively small doses, slightly increases the rate of the heart, and considerably increases the work done.

2. Larger doses decrease both the rate and the work done, finally producing diastolic arrest.

3. Atropine retards but is unable to prevent this result.

4. Repeated thallinization of the heart is followed by a peculiar shrinkage of the entire organ, during which it presents the dark color of thallinized blood.

5. The order in which the different parts of the heart are affected is the same for the terrapin as for the frog. To this must be added that the injection of a one per cent. solution of thallin into the substance of the ventricle produces systolic arrest within a few minutes.

6. Thallin, in comparatively small doses, produces dilatation of the arterioles, followed by a contraction of the same.

7. It produces dilatation of the capillaries.

8. It causes a much greater and much more permanent dilatation of the small veins than of either the capillaries or arterioles.

9. Under thallin venous blood and the walls of the veins assume an abnormally dark color.

Thallin, like kairin, reduces temperature by diminishing heat-production and by increasing heat-radiation. As an antipyretic, it is less dangerous, but no less objectionable, than kairin, for while its effect upon the ventricle of the heart is less depressing than that of kairin, its influence upon the blood-corpuscles is sufficient to condemn it.

III.

1. Small doses of hydrochinon in the frog reduce the rate of the heart and the amount of work done.

2. Larger doses quickly paralyze the great veins, sinus, and auricles in the order in which they are named, while the ventricle is affected but slightly.

3. Increasing venous pressure will materially hasten this occurrence.

4. In the terrapin small doses of hydrochinon slightly increase the amount of work done by the heart, but reduce its rate.

5. Larger doses rapidly reduce both rate and work, finally arrest the auricles and sinus in diastole, the ventricle, though much weakened, not being affected to that extent; the ventricles recover quickly and completely, the auricles slowly and imperfectly.

6. Hydrochinon produces dilatation of the arterioles and capillaries, which dilatation is followed by an abnormal contraction.

7. It causes dilatation of the small veins, which dilatation is much more extensive and lasting than that of either the capillaries or arterioles.

8. It quickens the flow in the arterioles and slows it in the veins.

9. It imparts a deep purplish color to the blood flowing in the veins.

10. The effect is the same, whether hydrochinon is injected hypodermically or is used externally. When injected, muscular twitchings come on, which necessarily interfere with the study of the vessels of the tongue.

From all these experiments made with hydrochinon on the heart and blood-vessels of the frog and terrapin, we must arrive at the conclusion that it reduces temperature mainly by increasing heat-radiation, owing to its influence upon the veins, which it largely dilates, and the capillaries and arterioles, which it also dilates, though to a less extent.

IV

1. Resorcin, in small doses, improves the heart's action.

2. In doses of medium size, it paralyzes the sinus and auricles, but has little effect on the ventricle.

2. In very large doses, it at once causes diastolic cardiac arrest, the ventricle recovering sooner or later, the auricles rarely ever.

As is the case with kairin, thallin, and hydrochinon, resorcin reduces the rate of beat of the heart, probably by a stimulating influence on the terminal filaments of the pneumogastric, and dilates the vessels through a similar influence on the ganglia of the vaso-dilators. The tonic effect which it has upon the ventricle is most probably due to its direct action upon the muscular substance of the heart. We have so far no explanation of the difference in the action of these drugs upon the two sides of the heart and vascular system. Nevertheless, the fact remains that all the drugs so far considered possess this property nearly to the same extent. The only difference regarding their influence upon the heart lies in the ventricle. Kairin and thallin, in small doses, exercise but a temporary tonic influence over its contraction. Hydrochinon and resorcin a more permanent one. They all quickly paralyze the auricles and lower the tone of the walls of the veins. The natural consequence is that a much greater quantity of blood will be contained in the veins than in

the arteries, and its passage from the veins back into the ventricle is greatly impeded, owing to the paralyzed condition of the auricles. Collapse therefore ensues; not so much from failure of the action of the ventricle as from the danger of the bleeding the animal to death into its own veins, to use the words of Ludwig.

v.

1. Antipyrin, in very small doses, injected into the lymph-sac of the frog, very slightly contracts the arteries, but dilates the capillaries and veins; in large doses, applied directly to the surface of the tongue, it gives rise to extensive dilatation in the veins and also the capillaries. A one per cent. solution of it applied to the tongue of the frog will, after a short time, cause coagulation in all the superficial blood-vessels.

The manner in which antipyrin reduces temperature is purely by increasing heat-radiation, owing to its extensively dilating the veins and capillaries; but what stamps it as an excellent antipyretic is that, besides dilating the veins, it also has a tonic influence on the heart and slightly increases arterial pressure, or, at any rate, does not cause a diminution of the same. It has, moreover, no injurious influence on the blood or the muscular tissues, and strengthens the auricles.

The objection to the employment of kairin and thallin as antipyretics is from the fact that they cause heart-paralysis, especially affecting the auricles, in doses only slightly larger than are sufficient to produce a lowering of the temperature. But this objection becomes an absolute danger when we take into account the destructive influence upon the blood-corpuscles and tissues generally.

Hydrochinon and resorcin, although not exerting the same weakening and directly paralyzing influence upon the ventricle of the heart which is peculiar to kairin and thallin, both paralyze the venous side of the heart, viz., the auricles, and greatly lower the tone of the walls of the veins. The exact amount of blood, therefore, which is driven into the veins through the increased action of the ventricle is only with great difficulty returned to the ventricle, and here the danger is not so much from failure in the power of the ventricle, as in the case of kairin and thallin, as from the danger of bleeding the animal to death into its own veins. The intense visceral, and especially pulmonary, congestion found on post-mortem by Dujardin-Beaumetz and others, in animals killed by resorcin, seems to confirm this view of the matter.

Antipyrin, though largely dilating the veins, increases the power of contraction of both auricles and ventricle, and has no injurious influence upon the blood nor the muscular tissues, and therefore possesses, indeed, all the good qualities of a perfect antipyretic.

PUNCTURE OF THE NERVE-SHEATH IN SCIATICA.

SIR JOSEPH FAYRER states in the *Practitioner*, April, 1886, that some years ago he was asked to see a case of aggravated sciatica of long standing in a man of middle age. The pain was very severe, continuous, liable to increase, and of a paroxysmal character. The posterior muscles of the thigh were somewhat atrophied. The patient himself was wasted and worn by continued suffering and deprivation of rest and sleep. There was no history of rheumatism, gout, syphilis, or other specific cause. A malarial origin, of course, was possible, but there was no satisfactory explanation of the origin of the disease. All the usual methods of treatment had been resorted to, but without relief. On examining the limb carefully he detected, with some feeling of fluctuation, a fulness and tenderness in the course of the sciatic nerve near its origin in the upper part of the limb. He therefore introduced a long, narrow knife into the swelling until it entered the sheath of the sciatic nerve. This gave exit to a certain quantity, a couple of drachms or so, of clear, serous fluid, which was followed by immediate relief of suffering, and rapidly resulted in complete recovery.

He says that he has seen other cases, none so well marked as this one, however, and with much less effusion of fluid, where incision, or rather puncture, has given relief, but he is not aware of others having similar experience, and would therefore call attention to it as of practical interest.

LACTIC ACID AS A DESTROYER OF PATHOGENIC TISSUES.

Since Mosetig-Moorhof's favorable results with this agent, already alluded to in the *GAZETTE*, various other observers have made use of it in lupus, superficial epithelioma, papillomatous growths, fungous processes, scrofular ulcerations, laryngeal phthisis, etc. Its advocates claim that it is not a true caustic, but selects diseased and spares healthy tissue. Wherever its employment is practical it is consequently to be preferred to curetting.

In the *Annals of Surgery* for March, 1886, DR. W. BROWNING publishes an analysis of the results obtained recently through the employment of this method of treatment.

The acid is a syrupy liquid miscible with water. Though not considered necessary by some, its action may be confined by covering surrounding parts with plasters, collodium, or traumaticin; fats are an impediment. It is applied on linen, felt, or the like, either pure or reduced with water, or mixed as a paste with pure pulverized silicic acid. It may be applied with a brush, but does not then act as rapidly. It is further recommended to bind it on with rubber, paper, or other confining material. It causes considerable pain for a few hours (Bum says one to three), and is usually removed in twenty-four or less.

Joseph (*Deut. Med. Woch.*, 1885, No. 43) cured a leucoplakia buccalis with eighty per cent. diluted lactic acid. Schnitzler reported at the September *Naturforscher-Versammlung* his experience with it—not very favorable—in tuberculosis of the larynx. Krause, of Berlin, has also used it in this affection, and Jellinek (*Wien. Med. Wochenschrift*, 1885, No. 46), in Schrötter's clinic, has for some months given it more thorough trial. For this purpose he prefers a twenty to eighty per cent. solution. The healthy mucous membrane is but slightly affected, while infiltrated portions are slowly destroyed. The more succulent the infiltration the more vigorous the action; cedematous parts shrink in three or four days, and troubles in deglutition are rapidly relieved. Most favorably affected were small ulcerations, especially on the vocal cords; larger sores were only prevented from further growths. In ulcerous, granular, and hypertrophic pharyngitis he had good results. In nasal troubles simple brushing does not suffice; longer contact is necessary. Jellinek believes that in laryngeal phthisis by daily applications more can be accomplished with this than with any other remedy, and that in its earlier stages it can thus be cured.

Bum (*Wien. Med. Wochenschrift*, 1885, No. 47) has for several months been employing it in fungous,—i.e., tubercular disease of soft parts—skin, subcutaneous tissue, lymphatic glands—in dispensary practice. The unhealthy granulations are reduced to an easily reducible pulp; the walls of the cavity do not bleed. After two or three applications, with intermediary pauses of two days, a permanent dressing of iodoform gauze is used, abundant healthy granulations develop, and a smooth, soft scar results. Lactic acid will at-

tack healthy as well as unhealthy epidermis, but in the subdermal tissue it seeks out fungous nests and destroys them. Bum gives short histories of nineteen cases in patients from 1 to 52 years of age. There were eight males and eleven females; eight ulcers, seven fungous and four fistulous. The average number of acid dressings was three, and the average time of cure twenty-five days, or, deducting one who removed dressings, but nineteen and eight-tenths days. No failures, and, up to date, six weeks to five months later, no relapse.

Finally, Mosetig has returned to the subject again (*Wien. Med. Wochenschrift*, 1885, No. 48), with the demonstration of good results in a large facial epithelioma in a man *æt.* 55, and an ulcer rodens on the face in a woman *æt.* 60. In the former, he had made twenty-six applications in a month, and in the latter he had made twenty already. In caries, he finds it excellent, good demarcation being produced, and there being less liability to relapse than after curetting. He has tried injections of the acid, $\frac{1}{2}$ to 1 grm. of a fifty to seventy per cent. solution. Whether relapses may yet occur he, of course, cannot say.

IODIDE OF POTASSIUM IN SPASMODIC ASTHMA.

DR. J. ORMROD publishes in the *Practitioner* (April 10, 1886) a tabular analysis of the results obtained in thirty-six cases of asthma treated with iodide of potassium. All of the cases displayed, though with varying severity, the cardinal symptoms of the disease,—that is, difficulty of breathing coming on suddenly, usually in the early morning during sleep, and passing off after a time, so as to leave the patient comparatively well, but recurring usually in a regular fashion at regular intervals. The iodide was given alone, or, if in combination, only after the effect of the uncombined drug had been tried, and it proved a failure only in nine cases out of thirty-six,—that is, in twenty-five per cent., while its good effects were not limited to the uncomplicated cases. Five or ten grains three times a day seemed to suit best in most cases, but in some a larger or smaller dose did better. In some, again, an increase of the dose did good for a time, but the effects seemed to wear off. In confirmed cases the drug can hardly be claimed to be curative, though it will in many relieve attacks, which, however, are apt to return when the use of the drug is stopped.

DRAINAGE OF IDIOPATHIC INTRA-CRANIAL ABSCESES.

The evacuation of traumatic abscesses of the brain has long been a recognized procedure, and has met with a fair measure of success. Recently Mr. Hulke has endeavored to extend this practice to idiopathic abscesses within the cranium. A few months ago a man was admitted into the Middlesex Hospital, under Dr. CAYLEY, suffering from coma, which had supervened upon a long-standing purulent discharge from the ear. There were no localizing symptoms. Mr. Hulke trephined the skull in the lower part of the temporal fossa, and by means of a director explored the temporo-sphenoidal lobe, without result. The operation was unattended with ill results, but after the patient's death, a few days later, an abscess was found in the cerebellum. Quite recently a woman was under Dr. Cayley's care with similar history and symptoms, and intracranial suppuration was diagnosed. Mr. Hulke determined to explore the brain. In this instance he made an aperture in the cerebellar fossa of the occipital bone, and through a small incision in the dura mater he passed a director through the cerebellum in all directions, but without striking an abscess. Finding that the symptoms were unrelieved, he subsequently trephined the temporal fossa, and opened an abscess in the temporo-sphenoidal lobe. We believe these cases will be duly reported to one of the medical societies. They mark an important advance in cerebral surgery, but further comments upon them must be deferred until all the facts are before us.—*Lancet*, April 10, 1886.

THE USE OF PAPAÏN IN THE TREATMENT OF DYSPEPSIA.

Papaïn, as appears from the conclusions of Prof. Finkler, has properties which compare advantageously with those of pepsin and pancreatin. As is well known, it is a digestive powder prepared from the juice of *Carica papaya* (melon-tree). 1. It digests equally in acid, alkaline, or neutral fluids, best of all in water. 2. It will dissolve 1000 times its own weight of fresh blood-fibrin. 3. Its action is increased by the presence of pepsin and pancreatin. 4. It acts at the temperature of the body. 5. Meat infused with a solution of papaïn keeps, while undergoing a softening process, much longer than it does without it. From this, it can be inferred that it has an

antiseptic as well as a peptonizing action. 6. The product of its action is a peptone, which, from its properties, may be taken to be Meissner's ϵ peptone. 7. Papaïn adheres to albumen to such a degree as to prevent its being removed by protracted washing with water. 8. Papaïn, in contrast to pepsin, acts when the resulting peptone-solution is highly concentrated. 9. The addition of antiseptics, such as salicylic or carbolic acids, does not interfere with its action. Hence, in papaïn (Finkler), we have apparently an ideal digestive ferment.

The principal uses for which papaïn has so far been employed is in the digestion and removal of diphtheritic membranes, but Dr. GEORGE HERSCHELL recommends this drug in the treatment of various forms of dyspepsia (*Brit. Med. Journ.*, April 3, 1886). Two preparations of this substance are now on the market (those of Christy and Finkler), which, according to Dr. Herschell, possess considerable difference.

In experimenting with them, and comparing the results, it appears at first sight that the former is much more energetic than the latter; but, on further investigation, it will be seen that this apparent virtue really unfits it for internal use, inasmuch as, not content with converting the fibrin into peptone, it again splits it up into bodies soluble in alcohol, and analogous to leucin and tyrosin, which, so far from being of any use in digestion, are absolutely injurious. It is, therefore, evident that the chemical and medicinal results must be kept apart.

If .01 gramme of papaïn (Finkler) be placed with 10 grammes of fresh blood-fibrin, and 50 c.c. of water, at 45° to 50° C. (113° and 122° Fahr.), and put into an oven of the same temperature, the solution takes place in from forty-eight to eighty hours. If, on the other hand, papaïn (Christy) be used instead, in the same experiment, the solution takes place in a much shorter time. But here an important distinction comes in.

If to the result of each experiment be added 10 grammes of fresh blood-fibrin, it will be found that the papaïn (Finkler) will still dissolve this in twenty hours, while that containing the papaïn (Christy) will not dissolve it at all. This proves that the former is a true catalytic ferment, and that the latter is not. An alcoholic extract of the latter will also show the presence of the leucin and tyrosin-like bodies by the usual tests.

Dr. Herschell finds papaïn chiefly valuable in the chronic stomach-catarrhs of children,

in acid dyspepsia, and in cases where severe gastric pain comes on shortly after eating.

1. *Chronic Stomach-Catarrhs of Children.*—Every one is familiar with that state in which we find children at times, and which is very frequently called "biliousness." It is characterized by loss of appetite, languor, pasty complexion, loss of sleep at night, and irritability during the day. There is frequently frontal headache, and the urine is loaded with lithates. If this state continue for any length of time the child emaciates, the unhealthy mucus which sheathes the stomach and intestines preventing the due absorption of the food. Cod-liver oil and compound syrup of the phosphates, which are generally given for this complaint as soon as the child begins to lose flesh, are not assimilated. Sometimes a cough develops, and the child is supposed to have incipient phthisis. Dr. Herschell has found these cases rapidly improve with the following prescription: R Papain (Finkler), gr. $\frac{1}{2}$ to gr. i; sacch. lactis, gr. i; sodii bicarb., gr. v. M. To be taken after every meal. It is also advantageous to give a drop or two of tincture of nux vomica immediately before the meal in a little water. The papain probably acts by dissolving the mucus, and thus facilitating the absorption of the food.

2. *Acid Dyspepsia.*—This drug is extremely valuable in this form of indigestion. *a.* As it acts equally well in the presence of an alkali, a sufficient quantity of bicarbonate of sodium may be given with it to neutralize the excess of acid in the stomach without impairing its peptonizing power. *b.* Its antiseptic action checks the abnormal fermentation to which much of the accompanying flatulence is due. *c.* An antiseptic can be given with it to increase this action. Dr. Herschell usually orders it in the following manner: R Papain (Finkler), gr. ii; sacch. lactis, gr. v. M. To be taken an hour after meals with the following draught: R Sodii bicarb., gr. xv; glycerin. acid. carbolic., π viii; spirit. ammon. aromat., π xx; aq. ad \mathfrak{z} iss. M. Fiat haustus. It appears that, taken one hour after a meal, a smaller dose of papain is required to produce the same result than if taken with the food.

3. *Cases where Severe Gastric Pain coming on shortly after Eating is the Prominent Symptom.*—Dr. Herschell has tried the drug upon twelve cases of this nature. Complete relief was given in ten, one case was partially relieved, and one completely failed to derive any benefit.

Apart from its internal use, papain will probably come into extensive use as a peptonizing agent, to prepare ready digested

food and enemata in the way in which pancreatin and pepsin are used at present.

THE USES OF POMEGRANATE-ROOT.

At a recent meeting of the Liverpool Medical Institution, Mr. NICHOLSON (*Med. Press*, March 24, 1886), after giving the history of pomegranate-root as a remedy for tapeworm, related the circumstances of his becoming acquainted in India with its use for other diseases of the bowels. Children are especially liable there to what appears to be tuberculous disease, or, at least, wasting disease, for Mr. Nicholson declined committing himself to an exact classification of the disease. They lose all appetite, become thirsty, peevish, with restless nights; the bowels are deranged, often loose, the belly is tumid, and in many cases the child wastes away and dies. The routine treatment for such a state is generally of no avail. In such cases the greatest benefit was found to result from the decoction of pomegranate-root; not from any anthelmintic properties, but from what may be termed an alterative effect. Several cases had been treated in England, where the disease, though generally unaccompanied by diarrhoea, is one of the causes of those deaths of children which are usually classified as consumption. The remedy had also been found beneficial in some diseases of adults, notably in chronic slight feverishness and debility, attributable possibly to malaria or enlargement of the spleen, though resisting quinine and other usual treatment. Mr. Nicholson had in his first English case been obliged to get pomegranate-root from abroad, but had since used the *elixir granati*, made according to Mr. Siebold's formula by Messrs. Evans & Sons, of Liverpool. It was administered in doses (for young children) of 10 minims, equal to a little more than half an ounce of the P.B. decoction. He had never seen any symptoms of toxic effects from large doses, either of the elixir or of decoction, from quite fresh root in India. The whole root seemed to be equally efficacious with the root-bark, at least for the diseases under consideration.

PROPOSED MODIFICATION OF PIROGOFF'S OPERATION.

At the recent congress of Russian practitioners, PROFESSOR TAUBER described and demonstrated on the dead subject an operation for removal of the foot, which he believes has

several advantages over Pirogoff's amputation. Standing on the outer side of the limb, he commences an incision at the insertion of the tendo Achillis, and carries it forward just below the external malleolus to the dorsum of the foot, and then vertically downwards on the inner side in front of the heel. When the middle line of the sole is reached, the incision is carried along it backwards and prolonged upwards to the starting-point at the insertion of the tendo Achillis, a flap having thus been cut consisting of the inner side and half the sole of the heel. The joint is then opened, the external ligaments being first divided and then the internal. The astragalus is seized with the bone-forceps and removed, and the anterior part of the foot cut off by Chopart's line, nothing being left but the os calcis, the soft coverings of which on the inner aspect are untouched. The os calcis is seized with the bone-forceps and turned so that the articular surface is towards the operator. The forceps are now taken by an assistant, who holds them tightly; the operator then saws the bone longitudinally in two; the outer half, which is free, is removed, the inner half remaining attached to the flap. The ends of the tibia and fibula are then sawn off just above the malleoli. The cut surfaces of these will be found to correspond almost exactly with that of the os calcis, which is now brought into apposition with them. The advantages claimed for this operation are: 1. The posterior tibial artery itself is untouched, only its branches being divided. 2. The insertion of the tendo Achillis, as well as its bursa, are not injured. 3. The surfaces of the os calcis and of the leg bones correspond very nearly to one another.—*Lancet*, April 3, 1886.

THE ACTIVE PRINCIPLE OF CALUMBA-ROOT.

Calumbin, the non-nitrogenous crystalline bitter principle occurring in calumba-root, together with berberine, is usually represented as not possessing much physiological activity. Dr. Lauder Brunton says ("Pharmacology," p. 757) it seems to have less action than berberine. But some experiments made with the separated crystalline principle, and reported by M. HOUDÉ, point to it being a somewhat energetic substance, giving rise to vomiting and diarrhoea. In small doses it appeared to augment the secretion of bile, of the glands of the stomach and the intestine. After full doses, the liver appeared to undergo granular fatty degeneration. A dose of 10 centi-

grammes ($1\frac{1}{2}$ gr.) administered to fowls caused death, preceded by digestive disturbance and frequent evacuations. It is thought that if it were not that calumbin is present in calumba in only small amount (0.35 to 0.4 per cent.), it would prove an inconvenient constituent in the administration of the drug.—*Pharmaceutical Journal and Transactions*, April 3, 1886.

VIBURNUM PRUNIFOLIUM IN ABORTION AND MISCARRIAGE.

We have in these columns several times recently drawn attention to the use of black haw in the treatment of threatened abortion or miscarriage, and the statements which we have made have been again confirmed by the experience of Mr. J. H. WILSON (*Brit. Med. Journ.*, April 3, 1886). He states that his experience has more and more confirmed him as to its value in such cases, and while it is not always successful, in those cases in which it failed he has been able to account for its doing so. Either the medicine had not been commenced in time, or the ovum had been detached before the viburnum was taken, or there was some reason to suspect a syphilitic taint. In cases of habitual abortion, when he has an opportunity of commencing the viburnum shortly before the anticipated period, and continued it at intervals on the first appearance of threatening symptoms, these patients have invariably gone on to the full time, and done well, without being subjected to restrictions or debarred from active exercise.

In the next class of cases, where there may be reason to suspect even a partial separation of the ovum and a dilated external os, with severe pains and hemorrhage going on for hours, and the patient under the impression that she could not possibly go on to her full time, he has been astonished at its effect, more than three-fourths of these cases doing well.

The most sanguine advocate of viburnum could not expect it to do impossibilities, or to prevent abortion when there is "a gaping os, and a detached ovum presenting." One might as well expect to resuscitate a dead body by galvanism.

Mr. Wilson has never seen ill consequences follow the administration of the medicine, however often the dose has been repeated. In two cases only has it been followed by slight headache. One patient inquired if she had not been taking quinine. The symptoms had been relieved; therefore it was not continued. In the other case, the patient had taken

4 grains of the extract every two hours. The only change was to extend the interval to four hours, and then gradually discontinue it.

Some patients have taken viburnum at intervals during the whole course of their pregnancy. It seems to act as a uterine tonic and sedative, and to relieve the woman of those harassing nervous forebodings which often lead to abortion. The patient, after taking only a few doses, has quite a changed expression. From a drawn, desponding look, her countenance becomes cheerful and happy.

On some of the plantations in America it is the popular belief a woman cannot abort if she be under the influence of black haw, although she may be taking medicine with a criminal intent. Mr. Wilson's experience would go far to confirm that opinion, for he has had patients in whom a succession of abortions have taken place, but, when under the influence of the medicine, they have been able to resist the severest tests,—frights, falls, strains, etc.,—and no ill effects have followed.

With regard to the mode of administering the drug: at first, the liquid extract was ordered, but the smell was so strong and objectionable that the whole house became impregnated; and in two cases, where the stomach could not retain it, the liquid was given as an enema.

He now orders the extract in pills of 4 grains, and finds it a convenient form; as usually made, they soon absorb moisture, and run into a mass, and therefore they should be gelatin-coated.

OBSTRUCTION OF THE BOWELS TREATED BY PARACENTESIS CÆCI.

At the meeting of the Medical Society of Victoria, held February 3, 1886, Dr. J. E. NEILD (*Australasian Med. Journ.*, February 15, 1886) read an account of a case of a man, aged 21, who sent for him on September 14 last, complaining of some pain over the cæcum and slight abdominal tenderness. There was no swelling, pulse and temperature were normal, but there had been constipation for three days. The condition of the bowels he connected with a supper of cray-fish and cucumbers. A dose of sulphate and carbonate of magnesia, with sulphuric ether, were given, and on the following day a mixture of castor oil and belladonna, with an external application of belladonna and glycerin over the region of the cæcum, which served considerably to diminish the tenderness. A week later the tenderness over the

cæcum had returned, and there was now some tympanitic swelling. The pulse went up to 115, and the temperature rose to 102°. As the bowels had been acting extremely irregularly, Dr. Neild concluded that the large bowel had temporarily lost its contractile power, and a mixture of strychnine, belladonna, and ginger was accordingly directed. The following day there had been no action of the bowels, and there was a doughy swelling extending from the cæcum half-way up the ascending colon, and it clearly contained both fæces and flatus. The pulse was 120 and the temperature 103°, and there was an expression of considerable anxiety in the patient's countenance.

Paracentesis of the cæcum was then performed with an ordinary hypodermic syringe, and the puncture gave exit to a large quantity of exceedingly offensive gas, and the swelling notably subsided. This treatment was quite successful. The abdominal tenderness continued for a few days, but the swelling gradually subsided. The enemata and strychnine and belladonna mixture were steadily persisted in, with occasional doses of castor oil. In a week the patient was well enough to go into the country, and he was seen there three weeks later by Dr. Neild entirely restored to health, with, however, an occasional tendency to constipation. It seems evident in this case that the peristaltic action of the bowels was arrested by the combined mechanical distention of fæces and flatus, and that the puncture of the bowel by relieving pressure averted constrictive inflammatory action.

THE TREATMENT OF BRONCHIECTASIS BY PARACENTESIS.

At the recent meeting of the Royal Medical and Chirurgical Society, Dr. THEODORE WILLIAMS and Mr. RICKMAN J. GODLEE (*Lancet*, March 27, 1886) communicated a conjoint paper on two cases of bronchiectasis treated by paracentesis, with remarks on the mode of operation. The first case was that of a gentleman, aged 67, who had suffered for two years from chronic bronchitis and emphysema, and six months later had dry pleurisy of the left lung. After the pleurisy the expectoration, before moderate, became profuse and somewhat fetid, the cough more and more harassing, and although Malvern and Bournemouth were visited and a great variety of antiseptic treatment was tried, he obtained no relief. On February 3 he was seen by Dr. Williams, who noted the exist-

ence of a bronchiectasis in the lower lobe of the left lung, the pleura of which was adherent. Tubular sounds were heard over two small areas, neither exceeding a half-crown in circumference, in the eighth interspace. At the request of Dr. Williams, a puncture was made by Mr. Godlee into the first area with an aspirating trocar and canula. Under antiseptic precautions the cavity was opened and a drainage-tube inserted. The result of the operation was that the cough nearly ceased, the expectoration, which was for a few days pneumonic, diminished from one pint a day to a few pellets, and became free from odor, and the patient gained flesh rapidly. At the end of six weeks the discharge ceased, the channel closed, and the wound healed up. Examination of the chest showed complete disappearance of tubular sound from the second area as well as from the first, and further shrinking of the chest-wall. The patient, at the close of nine months after the operation, remained free from cough and expectoration, and was able to walk four miles at a stretch.

The second case was that of a girl, aged 21, who, ever since an attack of typhoid fever, had had troublesome cough and copious expectoration, gradually increasing in quantity, and becoming more and more fetid. She had had hæmoptysis three times, on one occasion amounting to a pint. Examination of the chest showed several bronchiectases, two of which gave rise to very coarse râles over areas about the size of a half-crown in the sixth and seventh interspaces in the axilla; a third area was detected in the eighth space below the scapular angle. At first the patient improved under antiseptic treatment, the expectoration diminishing and becoming less fetid; but after a while these measures ceased to give relief, and an operation was decided on. On June 29, at Dr. Williams's request, Mr. Godlee passed a small exploratory trocar successively into each of the three marked spots, and, obtaining no result, inserted a large-sized aspirating trocar and canula into the seat of the first puncture in the sixth interspace. But an attempt to cut down on the cavity failed. A second operation was performed on July 16, and, after some exploratory punctures, Mr. Godlee, with antiseptic precautions, cut down on and laid bare the eighth rib, and excised about an inch of it in order to approach nearer to the bronchi before attempting to open them. The trocar and canula were then passed to a depth of five inches, and Mr. Godlee cut down along

the canula and inserted a drainage-tube. The wound gradually healed up, and the patient left the hospital at the beginning of September considerably improved, the cough slight, the sputum having diminished to about three ounces a day, and being only occasionally fetid. The presence of bronchiectases in other parts of the left lung, and possibly also in the right lung, precluded such complete success as was obtained in the first case.

A short account was then given of four other cases of bronchiectasis treated by tapping, in all of which the position of the cavities had been recognized and successfully punctured, but owing to the presence of other bronchial dilatations the success was only partial in these cases. The arguments in favor of the operation are: 1. The tendency to death by septicæmia in some form, unless proper drainage is effected. 2. The reduction in the amount of expectoration, this being due, not only to the removal of the matter, but to the disappearance of the effects of its irritation on the healthy bronchi. 3. The invulnerability of the lung-tissue, it being proved that punctures of this tissue give rise to little or no disturbance to the part or to the system generally. The difficulties of the operation are principally those of diagnosis of the exact positions of the bronchiectases: (1) from the presence of emphysema; (2) from the reverberatory character of their auscultatory sounds, which renders exact localization very difficult. Paracentesis of bronchiectases seems to be indicated under the following circumstances: 1. In cases where antiseptic treatment of all kinds has failed to correct the fetor of expectoration, and to allay the harassing nature of the cough, where death by septic pneumonia seems imminent. 2. Where the evidence goes to prove that the bronchiectases are confined to one lung, are situated in the lower lobe, and have overlying them an adherent pleura. It is not indicated where multiple bronchiectases exist in both lungs, where they are surrounded by emphysema, and where the pleura is non-adherent.

AN ALKALOID IN BETEL-NUT.

E. BOMBELON, according to the *London Medical Record* for April 15, 1886, announces that he has succeeded in isolating from the betel-nut a volatile alkaloid, resembling nicotine, to which he has given the name "arekane." He describes it as being left on the evaporation of an ethereal solution as a colorless oil, smelling like weak meat-broth and with a strongly alkaline reaction. It forms

varnish-like salts with tartaric, citric, hydriodic, and salicylic acids, the salicylate having a tobacco-like odor. The hydrochlorate gives with, platinic chloride a yellow, with gold chloride a light yellow, with mercuric chloride a white, and with tannin a whitish precipitate. The taste of the free alkaloid as well as of the salts is said to be at first imperceptible, but afterwards becomes acrid. The alkaloid increases the secretion of saliva, slackens the pulse, and has a purgative action.

A CLINICAL STUDY ON THE VALUE OF ANTIPYRIN.

It can no longer be questioned that antipyrin is a truly valuable drug, though its sphere of practical usefulness will probably be limited to the therapeutics of children's diseases. Still, in a recent meeting of the Academy of Medicine of Paris, there arose some—and we admit not unweighty—voices against the admission of this drug into the Pharmacopœia. An outcome of that discussion of French physicians is an exhaustive treatise of DR. LAURE, of the Faculty of Lyons, who desires, by additional clinical proofs, to demonstrate that antipyrin is an acquisition to our remedial resources, and has an indisputable claim to the recognition of every practitioner. We embody in the following abstract of Laure's essay the most interesting and clinically important facts.

In charge of the children's station at the Charité of Lyons, Laure found ample opportunity to test the worth of antipyrin in the various infantile affections. In the *Revue Mensuelle des Maladies de L'Enfance*, of February, 1886, Laure details his experience with antipyrin on fifteen patients, viz. :

Typhoid fever.....	7
General miliary tuberculosis.....	2
Acute articular rheumatism.....	1
Grave scarlet fever, complicated with diphtheria	1
Pneumonia	1
Chronic pulmonary tuberculosis.....	3

In typhoid fever the immediate effects of the antipyrin medication were surprising. The febrile temperature could be lowered, to use Laure's expression, as it were, at will. The remedy was well borne by the stomach, and in the majority of instances the reduction of the hyperpyrexia coincided with an amelioration of the general state of the patient. Under the influence of the first doses Laure saw the appetite and intelligence return, and

several times also that peculiar and immediate improvement observed to follow the exhibition of a cold bath. The first five cases recovered without complication; in the sixth case the drug was ineffective on account of the underlying tubercular and meningeal element which the autopsy revealed later. Nevertheless, Laure declines to consider this complication with the cerebral affection a contraindication for the exhibition of antipyrin, as he has cured a child suffering from spasmodic hemiplegia and a suddenly contracted typhoid fever by the exclusive administration of antipyrin.

In a case of acute articular rheumatism the reduction of temperature, articular swelling, and pain was likewise satisfactory, though the ultimate results of the antipyrin treatment could not be recorded, as the patient escaped from the hospital.

In the case of pneumonia in which antipyrin was also administered, it was difficult to draw the line of demarcation between the results of medication and the natural progress of the affection.

Called as a consulting physician to a case of grave scarlet fever, complicated with nasal, auricular, and ocular diphtheria, and a high elevation of temperature, Laure had the satisfaction to note the successful issue of an almost hopeless case under the antipyretic influences of antipyrin.

In three cases of pulmonary phthisis, Laure could verify the statement of Huchard and Arduin, that antipyrin modifies the fever rapidly, and that the reduction of temperature is followed by a notable subjective improvement with augmentation of appetite and general functional energy.

In two cases of acute general tuberculosis the results of trials with antipyrin were, of course, not very encouraging. The antithermic action of antipyrin was certainly far less marked in these affections than in typhoid fever, though in one case a considerable reduction of temperature could be obtained.

Antipyrin in therapeutic doses appears to be exempt from all danger, provided, however, its employment is watched by the thermometer, and is not extended over too long a period. Nevertheless, the fact is not to be lost sight of that the drug can produce toxic symptoms subsequent either to its accumulation in the system or to an unusually slow elimination. Six grains administered in three successive subcutaneous injections suffice to kill a rabbit of medium size, as has been shown by the experiments of Bouchut and of

Laure. Among the symptoms of intolerance, the profuse sweats occasionally noted deserve a special mention. Still, they depend probably more often upon an idiosyncrasy in the patient than upon the dose and the method of the administration of the drug. Huchard holds that excessive doses create a special liability for the sweats, though in Laure's experience the person who took the smallest quantity of antipyrin showed the greatest sweating.

In four instances Laure observed a morbilliform eruption after the employment of antipyrin, which, however, produced no inconvenience to the patients, excepting in the case of a little girl, in whom an intense and painful pruritus necessitated the stoppage of the remedy.

The vomiting noted by other observers has strangely never been seen by Laure, who, on the contrary, claims that the drug was so well borne by the stomach that the patients insisted upon additional doses. Two of Laure's patients complained of heat in the throat and of a sensation of thirst, symptoms which can, however, with propriety be ascribed to the profuse sweating from which these patients suffered.

The antipyretic effect of antipyrin is, according to Laure's observation, by no means immaterial, for the drug can produce a reduction of temperature amounting to four to five degrees. In one of Laure's little patients the thermometer marked 106° F. at the first visit, and the next morning at the same hour it registered 98° F., the patient having absorbed 1 drachm of antipyrin in doses of 7½ grains, given every three hours. This reduction (amounting to 8° F. for twenty-four hours) is the maximum effect obtained in the experience of Laure.

The action of antipyrin is a pretty rapid one, and within an hour's time a considerable reduction of temperature can frequently be witnessed, though it is difficult to exactly fix a uniform time for its action. The first dose is usually the most effective one, as is also conceded by Huchard. In exceptional cases only we find its antipyretic influence ensuing at a later period.

Antipyrin appears to diminish diuresis and the elimination of urea, as has been especially pointed out by Jacobowitsch (*Jahrbuch für Kinderheilkunde*, Leipzig, 1885, vol. xxiii., No. 4), who, for this reason, absolutely condemns the use of the drug.

The diminution of the frequency of the pulse is wholly unproportionate to the fall of temperature. In one of Laure's patients the

pulse was 168 at the time the thermometer marked a fall of 3° F.

Laure cannot agree with Huchard on the point of the hæmostatic virtues of antipyrin, and says that even the ingestion of 1 drachm *pro die* was in two observed instances unable to stop a profuse bleeding from the nose. The alleged antifermentative properties of antipyrin have, in Laure's opinion, been exaggerated, though their existence is undeniable.

The question of contraindications of antipyrin demands a brief discussion. Arduin recently asserted that albuminuria was unfavorably influenced by antipyrin. Laure, on the other hand, could not verify this observation. The good results obtained with antipyrin in a case of cerebral tuberculosis appear to indicate a certain tolerance of the nervous system toward the drug. In fact, Laure claims that save profuse sweats, necessitating the suspension of the drug, there are no veritable contraindications for antipyrin. Remembering, however, the tendency of antipyrin to diminish diuresis and to check tissue-oxidation, it would not be prudent to prescribe the drug nor insist in its employment in subjects presenting a persistent scantiness of urinary secretion.

Laure regards the systematic administration of antipyrin in children's diseases as an eligible substitution of Brand's hydiatic measures, and prescribes the drug usually in doses of 1½ to 7 grains (according to the age of the child), every three hours, whenever the temperature exceeds 102° F. If the urine grows scanty, if profuse sweats, thirst, an eruption, or any other contraindication present itself, the remedy is to be suspended for two to three days.

The great solubility of antipyrin permits of its incorporation with almost every excipient. The syrups of orange-peel and of peppermint are especially suitable vehicles to disguise the taste of the drug.

Our author cites the following memorable declaration of Huchard concerning antipyrin: "Only when the fever constitutes not an element in a disease, but rather a complication of the same, the hour of antipyrin has come."

Laure concludes his valuable essay as follows: "Antipyrin has given us excellent results in typhoid fever, pneumonia, rheumatism, scarlet fever, and the hectic fever of tuberculosis, and proved its superiority over quinine quite manifestly. The rapidity of the thermic movements in the infantile patients renders

the antipyrin medication particularly eligible for the therapeutics of diseases of children."

THE TREATMENT OF GONORRHOEA BY ANTISEPTICS.

Gonorrhœa is by no means a trivial disease, and when due consideration is not paid to its frequent sequelæ it really becomes a serious complaint. However, like many other diseases, if competently treated in its early stage, its seriousness is much modified. We all know that gonorrhœa is caused by a specific virus which excites a specific inflammation of the urethra, together with certain specific inflammations of adjacent parts, and is often followed by a form of blood-poisoning known as gonorrhœal rheumatism. It is evident that if the initial lesion of the specific inflammation of the urethra is sufficiently combated the secondary lesions are hardly likely to occur. Since a micro-organism has been found in the discharge of all cases under twenty-one days' standing, which is by many believed to be a specific cause of the disease, it is evident that agents which will destroy this micro-organism will hold out the greatest hope of being cures for the disease itself. It is evident, therefore, that antiseptics are the drugs which are indicated under this view of the pathology of gonorrhœa, and the report of the treatment of four hundred and thirteen cases by MR. R. H. FIRTH in the *Indian Medical Gazette*, March, 1886, which shows that corrosive sublimate furnished the best results, furnishes confirmatory evidence as to the truth of this view. Mr. Firth's results are appended in tabular form, as follows:

Treatment.	Number of cases treated.	Average number of days of disease.
Zinc sulphate, 5 grs. to \mathfrak{z} i.....	40	24.3
Zinc chloride, $\frac{1}{2}$ gr. to \mathfrak{z} i.....	44	27.3
Tannic acid, 5 grs. to \mathfrak{z} i.....	10	29.7
Potassium permanganate, 1 gr. to \mathfrak{z} i	30	19.9
Carbolic acid, 1 part to 40.....	29	23.6
Iodoform, 30 grs. to \mathfrak{z} i.....	11	29
Silver nitrate, $\frac{1}{4}$ gr. to \mathfrak{z} i.....	14	28.4
Corrosive sublimate, $\frac{1}{8}$ gr. to \mathfrak{z} i...	51	20.1
Corrosive sublimate, warm, $\frac{1}{8}$ gr. to \mathfrak{z} i.....	49	17.5
Chloral, 3 grs. to \mathfrak{z} i.....	7	31.8
Boracic acid, 5 grs. to \mathfrak{z} i.....	25	30.2
Quinine sulphate, 2 grs. to \mathfrak{z} i.....	26	26.3
Sodium salicylate, 5 grs. to \mathfrak{z} i.....	13	31
Lead acetate, 3 grs. to \mathfrak{z} i.....	20	26.1
Bismuth and glycerin, 1 to 10 parts	21	25.5
Warm water.....	23	26.6
Total number of cases.....	413	

From the foregoing it will be observed that Mr. Firth has tried sixteen varieties of injection. Of these the corrosive sublimate, when exhibited warm, gave the best results, followed closely by the potassium permanganate, and then by the cold injections of corrosive sublimate. For the majority of these injections he has employed tragacanth mucilage as the basis, particularly for iodoform, bismuth, chloral, lead and borax, and he thinks the method of injecting the drug in a warm solution to be a point of the highest importance in the treatment of gonorrhœa.

The warm water is very soothing, and Mr. Firth thinks it enables the drug more readily to get at the mucous follicles of the urethra which are the chief seat of disease. He has always been very careful to see that patients understand how to inject properly. In the above cases no one of them received internally co-paiba or cubebs. The only medicines given were an initial purge, and the maintenance for ten days on a simple diet. One case under treatment at Manchester with carbolic acid, received marked benefit from hourly administration of 8 drops of antimonial wine. In no other case was medicine given, except it were purgative. Mr. Firth has been recently trying the effect of the ordinary zinc lotion, both sulphate and chloride, used warm. From the few observations he has made, he thinks the results will be nearly as good as those from warm corrosive sublimate. In conclusion he advises medical officers to try the warm corrosive injection, or at least for them to see that the injection they happen to prefer is used *warm*. By so doing he thinks they will cure their patients more effectively and more quickly, too, than heretofore. He advises the keeping gonorrhœal patients in bed for at least eight days; but that is a point which depends upon the degree of local inflammations.

In using the corrosive injections, it is as well after the acute stage is over to increase the strength of sublimate to $\frac{1}{6}$ grain to the ounce of water. Such, Mr. Firth says, has been his practice.

CORROSIVE SUBLIMATE IN DIPHTHERIA.

DR. WERNER, medical officer to a circumscribed factory population of about two thousand near Narwa, in the Gulf of Finland, writes in the *St. Petersburger Medicinische Wochenschrift*, describing the satisfactory results he has obtained in diphtheria by treat-

ment with perchloride of mercury internally, combined with ichthyol inunctions. The disease is very frequent and fatal in the locality, he having attended during the last six years ninety cases, the average mortality of which was between sixty and seventy per cent., the majority succumbing from general weakness when the local affection was passing off or after it had quite disappeared. Last year the type was peculiarly severe. In July, August, and September eleven cases occurred, of which no less than nine proved fatal. From the end of September to the present time, however, during which period there have occurred seventeen cases, all of which were treated with perchloride of mercury, and many of which were very severe, there were only two fatal cases, neither of which was seen till a few hours before death.

The author's method of administration is as follows: For young children he dissolves a quarter of a grain of the perchloride in four ounces of water, for children of 6 or 7 half a grain in six ounces of water, and for adults three-quarters of a grain in eight ounces of water. This solution is given to the patients while they are awake every twenty or thirty minutes, in measured doses, so arranged that the quantities made up shall last from twenty to twenty-four hours,—i.e., about half a drachm in the case of young children, and a drachm in that of adults. When a good deal of sleep is obtained, larger doses are given at longer intervals. As a rule only milk is allowed as nourishment. If considerable pyrexia exists, an enema of from 10 to 30 grains of antipyrin, according to the age of the patient, is given, the rectum having been previously cleared out. Externally, ichthyol is diligently rubbed in over the swollen glands three or four times a day, the fingers being wetted with water when dry to permit of the rubbing being continued for some time. For the first two days of this treatment the local affection usually undergoes no improvement, but on the third day it begins to diminish and the general condition becomes better, the appetite increasing and the children regaining their wonted spirits. In no case did the author meet with the extreme debility which was frequent in cases treated by pilocarpine, even when the local affection was decreasing. As the patients approached convalescence the medicine was diminished, so that more than six bottles were never required. Complications never occurred, though three of the patients had previously had scarlatina.—*Lancet*, April 3, 1886.

ON THE OLD AND NEW METHODS OF TREATING CONGENITAL SYPHILIS.

PROF. MONTI reviews in the *Archiv für Kinderheilkunde* (vol. vi. No. 1) the advantages and inconveniences of the various therapeutic measures employed in the treatment of congenital syphilis. Our author makes the following divisions:

1. Frictions.
2. Calomel.
3. Corrosive sublimate.
4. Albuminate of mercury.
5. Peptonate of mercury.
6. Formamide of mercury.
7. Protoiodide of mercury.
8. Black oxide of mercury.
9. Tannate of mercury.
10. Iodine salts.

The friction-method is executed by (a) the blue ointment, (b) the oleate of mercury, (c) the mercurial plaster of Bayerdorf-Unna, (d) the mercurial soap.

All these preparations have the disadvantage of slightly irritating the delicate skin of children and of producing erythemata, eczematata, etc. Their action is rapid, and never causes salivation, unless the preparations are employed in too large a quantity or for too long a period. Mercury introduced into the system suddenly often determines an extreme anæmia. Cases of sudden death of children resulting from this medication are not rare. For these reasons Prof. Monti never employs mercurial frictions.

Calomel proves usually an efficient and rapid remedy for congenital syphilis, if persisted in for a sufficiently long time. To avoid the anæmia sometimes following upon the calomel treatment Monti uses only small doses of this drug, such as $1\frac{1}{2}$ grains given in four doses *pro die*. After the disappearance of the symptoms of syphilis, it is indispensable to complete the treatment by the administration of the saccharo-iodide of iron in daily doses of $1\frac{1}{2}$ to 4 grains.

The corrosive sublimate is best exhibited in a solution of $\frac{1}{8}$ grain in 2 ounces of water, of which 2 to 3 teaspoonfuls are given daily. The sublimate baths influence the syphilitic lesions far more slowly, while the hypodermic injections of sublimate are not so well borne by children as by adults. The hypodermic employment of corrosive sublimate is only justifiable when the intestines are seriously implicated, or the syphilitic lesions imperil the life of the patient directly.

The action of the albuminate of mercury is rapid, but the great pain occasioned by the

hypodermic injections of this preparation contraindicates its employment. Besides, the preparation is very unstable, and consequently little available for general practice.

The peptonate of mercury is more stable than the preceding preparation, but it possesses otherwise no special advantages.

The subcutaneous injections of the formamide of mercury, even when employed in a feeble solution, are too painful to justify their application; besides, they often produce subcutaneous abscesses.

The protoiodide of mercury is an excellent preparation, especially when the osseous tissues are affected; unfortunately, the intestinal mucous membrane is easily irritated by this drug.

The black oxide of mercury is badly borne, and in most cases vomited up.

Monti has used the tannate of mercury in twelve cases with success. The syphilitic lesions disappeared rapidly under its use without any alteration of nutrition. Its dose is $\frac{1}{3}$ to $1\frac{1}{2}$ grains.

Iodide of potassium may either be used internally (3 to 6 dessertspoonfuls daily of a solution of 15 grains in 4 ounces of water) or in form of a bath. The saccharo-iodide of iron in form of a powder ($1\frac{1}{2}$ to 4 grains daily) is also an eligible preparation. The internal administration of iodide of potassium provokes rapidly meagreness and iodism in children. The saccharate of iron, even if given for a long time, never produces wasting. Monti rarely prescribes for children the syrup of iodide of iron, as it often leads to a more or less violent intestinal catarrh.

THE TREATMENT OF WHOOPING-COUGH WITH CARBURETTED HYDROGEN.

All writers are pretty well agreed that uncomplicated whooping-cough of the sporadic kind is not a formidable complaint, and that its treatment may safely be left to the *vis medicatrix naturæ*; but, on the other hand, it very frequently is complicated, and sometimes seriously so, with convulsions, bronchitis, and pneumonia; while its most formidable sequels are emphysema and chronic affections of the bronchi. Various specifics have at different times been proposed, but all have in turn been abandoned. As is well known, improvement has frequently been obtained by the inhalation of the gases which are developed in the manufacture of illuminating gas, and therefore a course of visits to the gas-works has often served to produce

improvement in this disease; but as children frequently contract bronchitis and pneumonia from the exposure to cold from the overheating of the gas-works, this method of treatment can scarcely be looked upon as altogether satisfactory. DR. W. T. GREENE (*Med. Press*, April 7, 1886) believes that he has discovered a substitute for this method of treatment which will produce better results without the inconvenience of the former plan. He was led to this discovery from the fact that in one of his children, who was suffering from this disease in a severe form, after a day or two the symptoms gradually subsided and all trace of the whooping-cough disappeared in about ten days from the commencement of the attack. The explanation which he gives of this cure is that at the head of the child's cot there was a gas-pipe from which a slight escape of gas had been noticed for some time, but the workmen who had been sent for to repair the breach did not come, and so the gas continued in very small quantities to escape, and the little boy got rid of his whooping-cough in a marvellously short time. He repeated this mode of treatment in many other cases, and he claims always to have obtained the like gratifying result. His mode of administration is quite simple. A piece of ordinary gas-tubing is obtained of sufficient length to reach from one of the gas-burners to the floor, on which it may advantageously trail for a foot or two. The gas is then turned on sufficiently, just enough to make its odor perceptible, and the little patient allowed to stand over and inhale it for a few moments, as often as convenient. It will not make him cough, but, on the contrary, afford a grateful sense of relief, and after a few inhalations the more formidable symptoms of the disease will disappear, and will altogether cease to manifest themselves after a few days.

THE MICROBES OF INFECTIOUS OSTEO-MYELITIS.

PROFESSOR RATTONE in the *Archivio per le Scienze Mediche* (vol. ix.) publishes his latest observations on the germs of osteomyelitis, from which we abstract some points of general interest. The staphylococcus pyogenicus is a micrococcus which is found in pus, and cultivated on gelatin liquefies this substance. The streptococcus pyogenicus is another micrococcus, which is also found in the pus of an abscess; it is smaller than the former, and does not fluidify gelatin. According to numerous

observers, the staphylococcus is alone capable of producing infectious osteomyelitis.

Rattone observed in the pus derived from a deeply-seated abscess of a patient suffering from osteomyelitis the exclusive presence of a large number of streptococci. These two microbes not being identical, as can be clearly proven by special tests, especially by cultures in different substances, Rattone is led to regard the staphylococcus as the pathogenetic agent of osteomyelitis.

DR. CAVAGNIS, who reported the above facts in *Lo Sperimentale* (November, 1885), adds the following personal observation. He injected into the abdominal cavity of a rabbit a small quantity of blood, dissolved in a solution of chloride of sodium, drawn from the skin of a person affected with osteomyelitis of a grave, infectious form; the rabbit showed no pathological symptoms. The same observer injected into another rabbit a small quantity of pus taken from a tibial abscess of the same patient; the result was equally negative. Both rabbits were killed a fortnight later, but no abdominal lesions were ascertained.

The blood of the patient contained no micrococci, but the pus abstracted from him was crowded with micro-organisms. The question arises, whether the streptococcus, if found exclusively in pus, is not equally capable to propagate the osteomyelitic infection as the staphylococcus. Other experiments will be needed to definitely settle this point.

MYRTOL.

Myrtol has only been, hitherto, studied as a curiosity. DR. LINARIX, in his doctrinal thesis, *De l'Emploi du Myrtol*, gives a complete account of the properties of this substance. Myrtol is both an antiseptic and a disinfecting agent. By its presence, it prevents the decomposition of fermentative and putrescible organic substances; applied to the skin, it does not produce the slightest irritation, if the epithelium be intact. If there be a slight abrasion, a few drops produce a very trifling burning sensation, which quickly goes off. Myrtol stimulates the digestive faculties; all who use it find their appetite increased. In small doses, it acts as a sedative. It is eliminated by the lungs and kidneys, and has also a powerful balsamic action, but is more easily tolerated than most balsams. Its use is not followed by dyspepsia, nor by any of the other troubles attending the use of balsams in general. Dr. Linarix says that myrtol does not produce the same result at all periods of the

affections of the respiratory system; in subacute and chronic catarrhal affections, it should be administered when fever has subsided, then the sputa become less abundant, also less purulent. Six capsules daily, each containing fifteen centigrammes of myrtol, form a moderate dose, which should be taken before meals.—*Brit. Med. Journ.*, April 10, 1886.

ON BRONCHO-PNEUMONIA AND ITS MICROBES.

From the *Revue des Maladies de l'Enfance* of February, 1886, we abstract the following interesting views of DR. THAON, bearing on the microbic origin of broncho-pneumonia.

Our author leaves out of consideration the tubercular broncho-pneumonia, and simply discusses those forms which follow after an attack of diphtheria, measles, and whooping-cough.

The pneumonic exudate is crowded by micro-organisms lodged in the pus-cells and the large epithelial cells of the lung-tissue. To obtain satisfactory results in the search for the microbes of pneumonia, the examination is to be made within twenty-four hours after death in the region of the most recent pulmonary lesion, and with the aid of a coloration-method which least alters these (very sensible) microbes.

Thaon found in the lung-tissue after the pneumonic process two varieties of microbes, described previously by Loeffery, in diphtheria, viz., zooglœa and bacilli; but, unlike the mentioned German observer, he does not regard the bacilli as the main agents of the pathological process, but holds the zooglœa as the more constant and pathogenetic element.

In the broncho-pneumonia following upon measles and whooping-cough, Thaon discovered microbes presenting themselves as diplococci in chains and also large bacilli.

We miss in the above note any mention of the so-called Friedländer's pneumococci; that is, the microbes first found and described by Dr. Friedländer in pneumonia.

THE USE OF SOME MODERN REMEDIES IN HEART-DISEASE.

DR. A. ERNEST SANSOM publishes in the *Lancet* (March 20, 27, and April 3) an elaborate paper on the use of caffeine and con-

vallaria majalis in cases of mitral disease. In nearly all cases of valvular heart-disease, in which there is a failure of compensation, the practitioner first resorts to digitalis, and in mitral incompetence digitalis may be given almost indefinitely, and patients often take it for years with obvious advantage. In mitral stenosis, however, there are many drawbacks to the use of digitalis, which are often manifest even in the early stages of failing compensation. With some patients the drug does not agree, and cannot be made to agree. It may induce faintness and sickness. In children sometimes vomiting is induced, and it cannot be persevered with. In other cases, though these symptoms be not manifested, the drug, instead of increasing the force and decreasing the rate of the pulse, actually increases the feebleness and the rapidity. In some the drug, instead of acting as a diuretic, diminishes the quantity of urine excreted, and in a few instances there may be insomnia, restlessness, and nervous disturbance. These signs of intolerance of digitalis in cases of mitral regurgitation are rare, but they are sufficient to make us cautious. It is a good rule, and one that Dr. Sansom always adopts, never to give an adult a larger dose than 5 minims of the tincture (or its equivalent in infusion or the powdered leaves) three times a day for a longer period than a week without constant observation. Then, if tolerance is assured, the patient may continue to take the drug, or the dose may be continuously increased. It is to be remembered that the effects of digitalis may last longer than the period of its administration.

It is in the later stages, however, that the failure of digitalis is most marked. Its power of increasing the force of the left ventricle seems to be gone. The right cavities continue to dilate, and dropsy may be manifestly increasing, and yet the agent in all combinations with ordinary diuretics fails to increase the flow of urine. Then we are compelled to rely on other agents, and the first of these which should be tried is caffeine. The general effects of caffeine, which the readers of the GAZETTE are familiar with, are to a certain extent identical with those of digitalis. It slows the heart, increases its force of contraction, produces diuresis, has no nauseous effects, and no cumulative action. This drug, therefore, does not require incessant watching, and may be employed in cases of heart-disease where the kidneys are affected. As to its mode of administration, Dr. Sansom generally employs the citrate, which is freely

soluble in water. He employs it in from 3-grain to 5-grain doses dissolved in ordinary liquor ammoniæ acetatis. The dose is generally administered three times in the day, but in some cases once only.

Instead of the citrate, the pure caffeine may be employed, dissolved in a solution of benzoate or salicylate of sodium. In these it dissolves freely, and thus a concentrated solution may be made for hypodermic injection. The following formula Dr. Sansom recommends for internal use: Pure caffeine and benzoate of sodium, 1 drachm; distilled water, 6 fluidounces. Half an ounce contains five grains of pure caffeine.

Dr. Sansom reports several cases of mitral regurgitation under his own care of great gravity, in which the resources of ordinary treatment had been exhausted, and in which caffeine citrate was administered. These cases showed in nearly all that the amount of urine passed during a considerable portion of the period when the drug was administered was in excess of the amount passed previously. They also showed that the influence of the drug as a diuretic may be prolonged beyond the time of its actual administration, and thus indicated that the dictum that caffeine is not cumulative in action must be reconsidered. His cases also showed that the pulse became more regular and stronger and reduced in frequency, and he concludes from these cases that caffeine in the treatment of cases of mitral regurgitation, in which failure of compensation has occurred, is a valuable agent,—that is, it is a powerful diuretic, and is therefore very valuable in dropsical cases: that it tends to increase the force of the heart, to calm the respiration, and reduce the temperature, but that it fails in some cases to be of benefit, even though it may manifest this diuretic force.

Dr. Sansom has also employed convallaria in similar cases, employing the extract made from the roots, leaves, flowers, and stem, the dose being 2 to 8 grains; the fluid extract, dose from 2 to 10 minims; and the tincture, dose from 5 to 30 minims. The convallaria appears to possess a cumulative tendency, and consequently only one dose of convallarin, a glucoside and the active principle of convallaria, should be administered each four hours. The experience of various observers in regard to the action of this drug is very contradictory, so much so that it has been suggested that the activity of the plant varies with the locality in which it is grown. If this be so, of course it can be obviated by

the employment of the active principle, convallarin. Dr. Sansom thinks that possibly part of the contradiction has been due to the fact that the conclusions of various observers have been based upon different forms of heart-disease and heart-disturbance, and he therefore has grouped a number of cases of mitral regurgitation in which convallaria was administered in doses of 5 grains of the extract, or 20 minims of the tincture, three times daily. In these cases of mitral regurgitation the influence of convallaria as a diuretic is far inferior to that of caffeine. The rates of the pulse and breathing were, however, reduced, and the force of the heart and tension of the pulse were increased, with an improvement in the regularity of rhythm. He thinks, therefore, that in convallaria we have a drug which may be occasionally used with advantage in cases of mitral regurgitation; that it should be continued for no longer than weekly periods without interruption; that in cases manifesting atrophy it should be accompanied with caffeine, but that for general and systematic administration in mitral regurgitation it will not, except at intervals, usefully supplant digitalis. So much for mitral regurgitation.

Dr. Sansom has employed the same drugs in a number of cases of mitral stenosis, in which, as is well known, digitalis is of much less advantage than in mitral regurgitation; for, in many cases, instead of promoting regularity of the heart's action, it notably increases irregularity. Considering first the use of convallaria majalis in such cases, he has found that in all cases of mitral stenosis convallaria exercised a pronounced diuretic effect, and he thinks it a fair conclusion that convallaria is an important diuretic in cases of mitral stenosis, comparable in its effects with caffeine in mitral regurgitation, and that its effects in this direction are more pronounced in the obstructive than in the regurgitant lesions. As regards the action on the pulse and respiration, he found that in all cases the pulse decreased in rate under the convallaria and increased in tension, while the breathing was improved under the drug in nearly all the cases.

Dr. Sansom's general conclusions are that caffeine is an agent of great value in the treatment of mitral regurgitation, especially in those in which there is much dropsy, and that convallaria, though manifesting no very variable influence in cases of mitral regurgitation, except as an occasional substitute for digitalis, is of considerable therapeutic importance in mitral stenosis.

THE THERAPEUTICS OF THE ACETATE OF COPPER.

DR. LUTON (*Journ. de Méd.*, February, 1886) has been experimenting with the external and internal application of the acetate of copper in scrofula and tuberculosis. For external application, he makes use of an ointment composed of thirty parts of lard and one of the neutral acetate of copper. This ointment has, in his hands, served him very well in the treatment of scrofulous ulcers, tubercles, lupus, fistulæ contracted from cold abscess, glandular abscesses, and opened white tumors. Its application is not painful, and patients bear it well. Under this influence the wound takes on a healthy appearance, and cicatrization rapidly follows. As regards the internal use of this remedy, he thinks that he has obtained favorable results from its employment in a certain number of phthisical patients. He has given to these patients acetate of copper in the dose of $\frac{1}{16}$ of a grain each evening after the last meal, associated with $\frac{1}{2}$ grain of extract of opium to enable it to be tolerated, and to produce some sleep. In some patients he was able to increase the dose up to $\frac{3}{4}$ of a grain, without the addition of opium and without producing disturbance of the stomach.

RUSSIAN DIURETICS.

The Russians have great faith in diuretics, and therefore many drugs of this class are popular as household remedies. Some of these, such as foxglove, were in use among the peasants long before they were admitted into the category of even extra-pharmacopœial remedies prescribed by professional men. DR. S. A. POPOFF has recently made some researches on the action of certain household diuretics, communicating his results to the recent congress of Russian doctors. Cloud-berries (*Rubus chamæmorus*) are almost unknown in scientific medicine, though a paper on their diuretic quality was written in 1856 in German by Dr. Trinkovski, who recommended them in hydrocephalus. Dr. Popoff prepared infusions, decoctions, and tinctures, and also an acid which he believes to be the active principle, and found, by experiments on animals, that considerable increase in the urinary secretion was produced by the administration of any of the preparations by the mouth, under the skin, or into the veins. This occurred also when the spinal cord and the splanchnics were divided, and when the animal was under the influence of

curare. There was no alteration in the blood-pressure, and but slight palpitation of the heart. The only cases in which any slowing of the heart occurred were those in which a solution of the acid was introduced directly into the jugular vein. Nikanoroff's experiment of causing defibrinated blood to circulate through the kidney, first alone, and then containing the acid in solution, was tried, and the amount of blood flowing out of the renal veins determined, but no positive results were thus obtained. The author has no doubt that the cloud-berry acts by directly stimulating the renal tissue without acting on the heart or circulatory system. It has thus, he says, an effect similar to that of antihydropin (tincture of black-beetles), which is well known in Russia, and prescribed frequently, but this latter has the more powerful action of the two.—*Lancet*, March 6, 1886.

EMPLOYMENT OF TIN IN TREATMENT.

The metal tin, though long known, for it was used in the manufacture of bronze, has not entered to any large extent into the pharmacopœias of this, or, so far as we know, into those of any other country. The word "bedil," which is translated "tin" in the Old Testament, "stannum" in Latin, and *χασίτερος* in Greek, is not certainly to be identified with that metal, and, according to Roscoe and Schorlemmer, it is doubtful whether the metal which the Phœnicians are said to have brought from the Cassiterides, whose exact locality was unknown to Herodotus, was really tin. It is certain, however, that the metal was known to Pliny, that after Cæsar's conquest it was obtained from the Cornish mines, and that Diodorus Siculus describes its conveyance to a small island named Iktis, the topographical features of which, as described by him, correspond accurately with those of St. Michael's Mount in Cornwall.

Most authors hold with Orfila that tin has no toxic properties, since it is but slightly attacked by a solution of hydrochloric acid of the strength in which this acid exists in the gastric juice, and hence can only be absorbed in small quantity. According to Dr. PATENKO, of St. Petersburg, who has lately devoted himself to the study of the toxic effects of tin, it has been administered in England in the metallic state, in accordance with instructions given by Dr. Alston, who published some lectures on materia medica in 1770. These instructions are that the patient should take a

purgative of senna and manna on a Thursday before a new moon; on the following day an ounce of metallic tin is administered in four ounces of syrup; on Saturday half an ounce more tin is administered in two ounces of syrup, and the same quantity on Sunday; on Monday another purge of senna and manna is given. The success of the remedy, if it ever prove successful, has been attributed by some to the presence of arsenic, which is always present in ordinary tin; whilst MM. Cahours and Solvet consider that an active compound, distannethyl, may be formed in the intestine and become the active agent. Other experiments have shown that the injection of the protochloride of tin into the jugular vein of a dog, in doses not exceeding 5 grains dissolved in ten parts of distilled water, causes death with tetanic symptoms in from one to fifteen minutes, or, if ingested, vomiting, debility, and death. On post-mortem examination the gastric mucous membrane, and even that of the duodenum and jejunum, exhibited thickening and ulceration.

M. Patenko's researches, pursued in Professor Vulpian's laboratory, were confined to the metal itself and to the bichloride. He commenced by giving to two dogs 3 grains of chemically pure tin in powder once daily with the food, and continued its administration for six weeks. No indications of any injurious effects were observed; on the contrary, the animals preserved excellent appetites, and were lively and gained in weight. It was incidentally shown at the necropsy of one of the dogs that the metal had not caused the expulsion of numerous ascarides with which it was infested, nor of a *tænia serrata*. The urine contained no tin, nor was any found in the brain, liver, spleen, or kidneys. The powder was present in the fæces. It did not, therefore, appear to be absorbed.

The administration of the bichloride of tin gave different results. The animals experimented upon were frogs, guinea-pigs, and dogs, and it was injected subcutaneously, thrown into the peritoneal cavity, and introduced into the stomach. When subcutaneously injected it caused, in small and diluted doses, local anæsthesia, which augmented and extended when larger quantities were employed. Strong solutions caused gangrene, which penetrated deeply, destroying not only the whole thickness of the skin, but subjacent organs, such as the liver and stomach. Injections made into the peritoneal cavity exhibited its caustic properties, but no special peculiarities. Injected into the veins, in doses not

exceeding three-fourths of a grain, death rapidly followed, but the immediate cause of death was not apparent, and has not been ascertained, though it was probably due to the action of the agent on the central nervous system and upon the muscles. The action on the stomach was not marked; even when given in rather large quantities for some time with the food it only caused indigestion. On the whole, therefore, the observations of Dr. Patenko confirm those of previous experimenters, and show that the metal has no poisonous action, but that the bichloride acts essentially on the central nervous system and the muscles.

ANTIPYRIN IN OPHTHALMIC PRACTICE.

Some observations by Khomyarkoff and L'voff, tending to show the superiority of antipyrin over salicylate of sodium in articular rheumatism and migraine, having induced a Russian ophthalmic surgeon, DR. T. N. KATSAUROFF, to try it in cases of ciliary neuralgia and headache accompanying various eye-diseases, he has published the results of this method of treatment in the *Vrach*. The patients comprised seventeen males and ten females, their ages varying from seventeen to seventy-five. Apart from the eye-affection, all but three were free from disease. The antipyrin was always given in doses of a gramme (15 grains), and in every case appeared to be of distinct benefit in relieving the pain, a single dose being sufficient in fourteen cases, while in thirteen cases this had to be repeated, in two of them only (optic neuritis and scleritis) a third dose being found requisite. The author mentions that in nine cases where operations for cataract had been performed, and the enforced subsequent dorsal position proved so irksome as to induce headache, the antipyrin seemed particularly valuable, though two of them were complicated by iritis. The action of the drug in these cases was rapid, an improvement generally taking place in half an hour, and the pain being completely relieved in an hour. More or less satisfactory results were obtained in ciliary and cephalic pain accompanying different forms of keratitis, of which there were four cases; in corneal ulcers, of which there were three cases; and in glaucoma, of which there were ten cases. The drug seemed, however, to have less effect on a case of double neuritis, on two of atrophy of the optic nerve, and on one of scleritis. As observed by

Khomyarkoff and L'voff, antipyrin proved very valuable in Dr. Katsauroff's hands in migraine, his case being of traumatic origin, a foreign body having penetrated the soft structures of the orbit. Previously to using antipyrin as described, Dr. Katsauroff had been in the habit of employing salicylate of sodium in cases of headache accompanying eye-diseases, but he found that it was often necessary to give it in such large doses as to cause singing in the ears, whereas no unpleasant effects were produced by antipyrin in any of his cases.—*Lancet*, April 10, 1886.

DOUBLE PNEUMONIA TREATED BY PILOCARPINE.

DR. H. MOLIÈRE and his assistant M. FOCHIER publish in the *Journ. de Médecine*, February, 1886, a note relative to the good effects of pilocarpine in a case of double pneumonia. The case was that of a man greatly weakened by dysentery and albuminuria, who was attacked by double pneumonia, under which disease his intestinal troubles became greatly increased. The state of the patient appeared desperate, when an injection of $\frac{1}{100}$ of a grain of pilocarpine was given. As the result of this, the number of respirations fell from 48 to 24, and the dyspnoea was greatly relieved. Four hours after another injection was given, which was again repeated on the next morning. After each of these profuse sweating and salivation came on, while at the same time there was the greatest relief in the dyspnoea. The patient was carried on to defervescence, and was soon cured. Molière adds, that he employed pilocarpine in this case on account of the analogy which he had observed in other instances. Thus, in an old man, who was attacked by uræmia, in its form of dyspnoea and delirium, and who appeared on the point of death, an injection of $\frac{1}{100}$ of a grain of pilocarpine caused almost immediately a disappearance of all the symptoms, which, however, again returned in the evening to be again relieved by a second injection. So, also, in a young woman in the comatose form of uræmia, and in whom the renal lesion was secondary to an organic affection of the heart, the pilocarpine immediately arrested the coma, and so permitted the possibility of acting directly on the heart and regulation of the circulation. But in this latter case it is certain that, in consequence of the diseased condition of the renal epithelium and the pulmonary congestion, the

purification of the blood was almost entirely prevented, so that uræmia was combined to a certain extent with asphyxia; and although the profuse sweating and salivation produced by the pilocarpine, by reducing the congestion of the lungs, permitted the removal of the asphyxia, and also to a certain extent the uræmia, the sweating could only temporarily relieve this latter condition but could not cure it.

THE PHYSIOLOGICAL ACTION OF ANTI-PYRIN AND KAIRIN.

In the *Meditzinskoie Obozrenie*, Fasc. xii., 1885, p. 1203, DR. S. J. PAVLINOFF (*London Med. Record*, March 15, 1886), of Moscow, describes the results of his experiments which have been carried out, under Professor L. Z. Morokhovetz's guidance, in order to compare chemical and physiological properties of antipyrin with those of kairin.

Chemical Properties.—The preparation of antipyrin was obtained from Ferrein, and represented an amorphous yellowish powder of pretty strong bitter taste, with aromatic flavor. It was soluble in water and ether; the solutions were neutral. Kairin belongs to light oxidizable substances; its solutions, kept in contact with the air, within twelve hours become of a ruby color, and in a few days rich dark cherry-red. On the other hand, solutions of antipyrin remain unchanged (that is, either colorless or yellowish) for a month, or even longer. Being treated by nitric acid, kairin solutions turn to dark cherry-red, and, on being subsequently diluted, they gradually become yellow, the latter coloration occurring still even when only 0.001 per cent. of the drug is present. Antipyrin gives no reaction with the acid. But both kairin and antipyrin solutions assume a claret-red color on being treated by perchloride of iron (Fe_2Cl_6).

Physiological Action.—A. *Blood*.—As Morokhovetz showed, when mixed with an equal volume of a 0.001 per cent. solution of kairin, the blood assumes a claret-red color, and gives the methæmoglobin bands on the spectroscopic examination. The red blood-corpuscles take a cup-like form and brownish color. But antipyrin remains entirely inactive, even when a one per cent. solution is employed. The same difference between the two substances is observed, also, when intravenous injections of their solutions in dogs are undertaken. B. *Blood-pressure*.—Antipyrin induces an increase of the arterial tension, while the latter is rapidly and very considerably lowered by kairin

(after a fleeting initial rise). C. *Pulse*.—Under antipyrin, the pulse becomes somewhat retarded, but its rhythm remains regular; while under kairin it quickens and assumes a filiform character. Some experiments seem to point out that kairin affects the cardiac muscle, the cardiac nerve-apparatus remaining intact. On the contrary, antipyrin appears to act on the latter, and to leave intact the former. D. *Respiration*.—Antipyrin produces a very considerable quickening of the respiration, the type of which, however, remains uniform all through. On the other hand, kairin brings about interrupted or irregular breathing. Therefore, as far as circulation and respiration are concerned, kairin and antipyrin are endowed with diametrically opposite actions. E. *Salivary Glands*.—Both of the drugs augment the secretion of saliva; antipyrin may be detected after a while in the latter, though in small quantities. F. *Pancreas*.—Neither antipyrin nor kairin has any influence on the secretion of pancreatic juice. G. *Liver*.—Kairin increases the secretion of bile, the color of which gradually turns to black, while antipyrin remains entirely inactive. H. *Kidneys*.—Neither of the drugs manifests any action on the quantity of urine. But the first portions of urine voided after the introduction of antipyrin contain a considerable quantity of the drug. Therefore, antipyrin is eliminated from the system through the kidneys and salivary glands. I. *Motor Nerves*.—Dr. Pavlinoff confirms the statement of Morokhovetz that kairin, like curare, affects the intramuscular endings of the motor nerves (in frogs); the drug acts antagonistically to strychnine (as Professor F. P. Shere-metevsky supposed). Nothing of the kind is noted as regards antipyrin. J. *Reflex Action*.—Antipyrin increases the reflex action (as Professor Demme, of Berne, first proved). K. *Temperature*.—Antipyrin depresses the normal temperature, but not at any uniform rate, the latter varying from 0.5° to 2° C. and more; generally speaking, the depression is the more marked, the shorter are the intervals between the doses administered. Under kairin, the temperature sinks in consequence of the drug absorbing oxygen of the blood; hence the use of kairin in cases of pneumonia, chronic pulmonary disease, anæmia, cardiac disease, etc., is fraught with obvious and immediate danger. In all such cases, antipyrin may be safely and effectively administered, the drug being indifferent in its chemical behavior towards the blood, and, if anything, strengthening the cardiac action.

ON PTYCHOTIS AJOVAN.

From *Le Progrès* (Geneva, February 20, 1886) we abstract the following note about ptychotis, or carum ajovan, an Indian plant possessing medicinal virtues which has hitherto been but little known in this country.

This plant, belonging to the umbelliferae and extensively cultivated in India, seems to have been first brought to the notice of the English profession by Dr. Percival, but soon fell into an undisturbed oblivion. The ajova seeds are, according to the testimony of Dr. G. WARING, the most active of all carminative umbelliferous species, and combine the stimulating action of capsicum or sinapis with the bitter properties of chirata and the anti-spasmodic ones of asafoetida. The Indian pharmacopœia contains an ethereal oil and a distilled water, gained from the ajava-seeds. The seeds are at present largely used in the preparation of thymol, and it is possible that this drug, obtained from the ajava-base and combining antiseptic with powerfully-stimulating properties, may be of service in the treatment of cholera. As the seeds suppress the desire for alcoholic drinks, they may also form a valuable adjuvant to the therapeutics of dipsomania.

From this same journal we abstract the following remarks concerning three other Indian drugs as yet not employed by American practitioners :

(1) *Plantago ispaghula*.—One part of the seeds of this plant mixed with twenty parts of water makes a thick, tasteless jelly, and therefore is far preferable to the quince-seeds. Though of service as a demulcent in catarrhs and kidney-troubles, the principal value of these seeds lies in their efficacy against diarrhœa. The European residents of India prefer the ispaghula-seeds to any other remedy in chronic diarrhœa. The dose for an adult is 2 drachms of the seeds, taken in an uncommuted form, with $\frac{1}{2}$ drachm of sugar. The seeds passing through the intestinal track take up a large amount of water and swell up, and having passed the lower portion of the bowels, they give up the large quantity of consistent mucus they previously absorbed.

(2) *Scopolia lurida*, a mydriatic rivalling and perhaps excelling in energy belladonna. The tincture prepared from the leaves of this plant (1 part of the leaves to 8 parts of alcohol) given to various patients produced an extreme mydriasis, and in two cases even blindness, which only disappeared after the suspension of the drug. The maximal dose is 20 drops in twenty-four hours.

(3) *Jatropha curcas*.—This plant contains a milky juice possessing considerable hæmostatic power. Through the local application of the freshly-prepared juice the stoppage of hemorrhages has been obtained which did not yield to the action of alum, chloride of iron, and turpentine. It is claimed that this juice causes no pain, and has no caustic action, but that it simply coagulates the blood and covers the bleeding part with a tenacious fluid. Applied subcutaneously the juice is said also to cure aneurisms.

BELLADONNA IN THE TREATMENT OF NOCTURNAL INCONTINENCE OF URINE.

The frequency and difficulty experienced in the treatment of nocturnal incontinence of urine in children, and occasionally in adults, renders any additional light on the therapeutics of this troublesome affection particularly acceptable. A point which appears new to us is brought out in a report of a case by Mr. H. A. HUSBAND (*Can. Lancet*, May, 1886), and seems to fall under this category.

The case was that of a boy, aged 19 years, the eldest of four sons, all of whom had been troubled with the same complaint since birth. The patient had at various times been treated with tincture of belladonna, but with no apparent benefit. It was found that the boy suffered from chronic constipation, which was relieved by a pill of extract of rhubarb and nux vomica, given night and morning.

The lower bowel was washed out every night with an enema of warm soap and water, and then a suppository containing one grain of belladonna placed in the rectum. The object of the enema was to clear out any hardened fæces or thread-worms, which, by their presence, might by their irritation produce the incontinence. This treatment was rigidly continued for three months with some slight benefit, a week or two passing without a return of the complaint. The amount of belladonna was now increased to a grain and a half. And then a new symptom made its appearance. The nocturnal incontinence ceased, but the patient during the day became troubled with a constant desire to pass water, the annoyance being so great that he had to micturate every five minutes. The suppository was then ordered to be used night and morning, with the entire discontinuance of the nocturnal and diurnal trouble. During the last three months the pupils became permanently dilated, but there was no

irritation of the skin, and only occasionally slight dryness of the throat. In six months a complaint which had lasted nineteen years was completely cured, and the patient was enabled to proceed to the continent on his business, taking with him a mixture containing nitro-muriatic acid, strychnine, and gentian. The conclusions drawn from the above case are these, that of all preparations of belladonna the extract is the best, that the success in treatment, to a great extent, depends on the clearing of the rectum of its contents, and the application of the belladonna as near the bladder as possible, and that partial success at first is no reason to discontinue the treatment in despair.

ON MORRHUOL, THE ACTIVE PRINCIPLE OF COD-LIVER OIL.

In spite of the numerous existing preparations and emulcents intended to disguise the repulsive taste of cod-liver oil, the objection of many patients to the oil in any shape or form cannot be overcome. In view of this fact, well known to every practitioner, the question of isolating the active principle of cod-liver oil becomes one of universal interest. M. CHAPOTEAU has the credit, as far as our knowledge goes, of having first enriched the pharmacal resources of the profession with morrhuol, the isolated active principle of cod-liver oil. The *Progrès* of February 20, 1886, contains the details of the isolating process, as first published by Dr. Joseph Lafage in *Le Bull. de Thér. and le Bull. Com.* According to the mentioned source, morrhuol is a sharp, bitter, and very aromatic substance, crystallizing partly at an ordinary temperature. It contains phosphorus, iodine, and bromine in notable quantities, about ten to twelve times as much as is contained in the primitive oil. These different bodies are so intimately united that their separation resists all efforts. The active principle of cod-liver oil is thus seen to be a rather complex body. The cod-liver oil itself loses its medicinal properties wholly after the separation of morrhuol and simply acts as a fatty substance. On account of the pungency of morrhuol it is preferable to administer it only in capsules, 3 to 5 drops, which correspond to about 1 drachm of cod-liver oil. Children 6 to 8 years of age may receive two capsules; children 8 to 12 years of age four capsules, and adults eight capsules *pro die*. Even a prolonged employment of morrhuol occasions no digestive troubles,

but appears, on the contrary, to improve the appetite, and to give more rapid results than cod-liver oil.

Lafage obtained very gratifying results with morrhuol in tuberculosis at its first stage, in scrofulosis and rachitis, and in chronic bronchitis. The above recommendation of morrhuol ought to induce us to give this preparation a trial.

THE TREATMENT OF RETENTION OF URINE WITH THE CAPILLARY CATHETER.

The skilful use of the catheter in a large proportion of cases of retention of urine associated with organic stricture is followed by immediate relief, but the operation is often prolonged, and always very painful, unless performed under the influence of an anæsthetic. Sometimes the urethra is lacerated, and, when this accident occurs, irritation or fever are excited, which are soon followed by increased contraction of the strictured part of the canal. Cases of retention in which it is found impossible to introduce into the bladder any kind of instrument are of rare occurrence at the present day; but when such cases are met with, provided the patient's condition demands immediate relief, the bladder should be aspirated at once above the pubes.

DR. J. WARD COZZENS suggests in the *Med. Press*, March 31, 1886, a trial of the capillary catheter, which he has now used successfully in many cases of retention with great satisfaction. The operation is practically painless, and requires no anæsthetic, while the flexible capillary catheter, even if it fails to do good, can really do no harm. The form which he uses is a compound instrument, consisting of a filiform bougie and a fine catheter, very carefully prepared with woven web and gum elastic, and possessing great flexibility and toughness, together with a smooth and highly-polished surface. His method is to first inject the urethra with warm oil, and gently pass the catheter down to the stricture. As soon as its progress is stopped, it must be rotated between the thumb and finger, then withdrawn two or three inches, and twisted down again upon the obstruction. During the repetition of these procedures the little instrument often readily passes into the bladder. After the operation is over the instrument may be retained for a few days, or it can be removed and introduced in a day or two, and employed as a guide for a tubulated catheter.

*THE ACTION OF GRINDELIA ROBUSTA
ON THE HEART AND CIRCULATION.*

Following the suggestion of Professor S. P. Botkin, Dr. V. P. DOBROKLONSKY, of St. Petersburg, has undertaken (*London Med. Record*, March 15, 1886; *Ejenedelnaia Klinitcheskaja Gazeta*, No. 34, 1884, p. 535) a series of experiments on frogs, in order to examine the action of fluid extract of *grindelia robusta* on the heart and circulation. The main results may be summarized as follows:

1. In small pharmacological doses (0.1 to 0.2 cubic centimetre) (1½ to 3 gtt.) the drug causes a slight and fleeting quickening of the heart and an increase of the arterial tension, lasting for several tens of minutes.
2. In large pharmacological doses (0.4 to 0.6 cubic centimetre) it decreases both the frequency of the heart and the arterial tension, the heart ultimately stopping in diastole.
3. In moderate pharmacological doses (0.2 to 0.4 cubic centimetre) the drug, in the beginning, slightly quickens the cardiac contractions and elevates the blood-pressure, but subsequently gradually, but considerably, slows the heart, the arterial tension falling somewhat later.
4. In toxic doses (0.6 cubic centimetre and upwards) the drug swiftly stops the heart in diastole.
5. A *preceding* division of the spinal cord, or of the vagi and sympathetic, or of both of the cord and nerves named, or a preceding subcutaneous injection of sulphate of atropine, does not change the phenomena as stated above; but when made *after* the subcutaneous injection of *grindelia*, they diminish the number of cardiac contractions from seven to six a minute.
6. A series of experiments with an isolated heart gave essentially the same results as the experiments with the whole animal.
7. Small doses of the extract cause constriction of the arteries; moderate doses first contract and then dilate the vessels; and large doses dilate the latter from the very beginning.
8. Moderate doses rapidly bring about a decrease of excitability of nerves and muscles; the excitability of nerves sinks somewhat sooner, and from comparatively lesser doses than that of muscles. Dr. Dobroklonsky at present is studying the action of *grindelia* on warm-blooded animals; he mentions, however, in his present note that the results obtained up to the date have been, in their essential features, identical with those for cold blooded.

In the *Russkaia Medits.*, No. 1, 1886, p. 11, Dr. L. GRINEVITZKY highly praises the services obtained from the administration of fluid extract of *grindelia robusta*, in daily doses of

2 or 3 drachms, in inveterate chronic bronchial catarrh. Asthmatic attacks are as rapidly and as strikingly relieved. Distressing cough soon disappears, nearly altogether, and expectoration becomes easy. The drug, however, entirely fails to relieve any respiratory disturbances accompanying other pulmonary diseases, as well as those caused by cardiac and nervous diseases.

*A SEMI-OFFICIAL DESCRIPTION OF SOME
NEW REMEDIES.*

The Pharmaceutical Commission of the German Pharmaceutical Association having received a number of new remedies for examination, has published the results in the following paragraphs (*Pharm. Journ. and Trans.*, April 17, 1886):

AMMONIUM SULPHO-ICHTHYOLICUM.

Ichthylol-Sulphonate of Ammonium.

A red-brown syrupy liquid with igneous bituminous odor and taste, puffing up considerably and carbonizing when heated, and upon continued incineration volatilizing without residue. Water dissolves it to form a clear red-brown liquid of faintly acid reaction, and the same is the case of a mixture of equal volumes of alcohol and ether. Pure alcohol or ether dissolves it only partially; petroleum benzine only takes up a small quantity. Upon the addition of hydrochloric acid to the aqueous solution a dark resinous mass is precipitated, which, when separated, is soluble in ether and in water, but is again thrown out from the latter solution by hydrochloric acid or sodium chloride. Treated with potassium solution, the preparation develops an odor of ammonia, and the mixture dried and burnt yields a hepatic coal, which, with hydrochloric acid, gives off sulphuretted hydrogen.

The ichthyolate of ammonium loses upon drying in a water-bath at least half its weight.

ARBUTINUM.

Arbutin.

Slender, white shining crystalline needles, without smell, with a gradually developed, but persistent, bitter taste, melting at 167° to 168° C., and burning at a higher temperature without residue. It forms neutral solutions with 8 parts of cold water, 1 part of boiling water, and 16 parts of alcohol; in ether it is scarcely soluble. Upon heating 1 part of arbutin with 8 parts of peroxide of manganese, 2 parts of

sulphuric acid, and 1 part of water it gives off the penetrating odor of quinone. The watery solution is rendered blue by a small quantity of solution of perchloride of iron and green by a larger quantity. No precipitate is produced by either acids or alkalies. It blackens ammoniacal silver nitrate solution first after boiling with dilute sulphuric acid, and throws down cuprous oxide from alkaline copper solution upon heating. It dissolves in sulphuric acid colorless, turning red after a short time; a trace of nitric acid turns this solution yellow-brown.

An aqueous solution (1 in 20) is not changed by sulphuretted hydrogen.

NATRIUM SULPHO-ICHTHYOLICUM. ICH-
THYOLUM.

Ichthysulphonate of Sodium. Ichthyol.

A brown-black tar-like mass with a bituminous odor, puffing up when heated, and carbonizing to an alkaline hepatic coal, which colors the flame intensely yellow, and, after continued incineration, leaves an ash, an aqueous solution of which with excess of nitric acid is at once colored strongly blue by barium nitrate. Water dissolves the preparation to form a somewhat turbid, dark brown, almost neutral, liquid, with a green fluorescence. A mixture of equal parts of alcohol and ether dissolves it with a clear deep brown color, as also does benzol, but pure alcohol or pure ether dissolves it only partially, and petroleum benzine scarcely at all. The aqueous solution treated with hydrochloric acid in excess throws out a dark resinous mass, which, after separation, is soluble in ether and in water, but is again separated from the latter by hydrochloric acid or sodium chloride. No ammonia is evolved from the aqueous solution upon warming it with soda solution.

PELLETIERINUM TANNICUM.

Pelletierine Tannate. Punicine Tannate.

A yellowish amorphous powder, without smell, with an astringent taste and faintly acid reaction; soluble in about 700 parts of water, 80 parts of alcohol, and freely in dilute acids upon warming. The aqueous solution is precipitated blue-black by perchloride of iron. If a hydrochloric acid solution be shaken with excess of soda solution and ether, the ether separated leaves after evaporating spontaneously slightly yellowish oil-like drops, having a peculiar odor and strongly alkaline reaction, and which form fumes when brought near to hydrochloric acid.

PYRIDINUM.

Pyridine.

A clear, colorless, volatile liquid, with an igneous odor and burning taste, and, in aqueous solution, an excessively alkaline reaction; boiling at 116° to 118° C.; miscible clear with water, alcohol, ether, benzine, and fixed oils. Specific gravity 0.980. Pyridine gives rise to precipitates in solutions of most metals, but not in those of lead acetate and magnesium sulphate. Copper sulphate solution is colored deep blue by excess of pyridine. Hydrochloric acid solution of pyridine gives with solution of iodine a brown, with bromine water an orange-yellow, and with platinum chloride a yellow crystalline precipitate.

Pyridine should not be altered by light. An aqueous solution (1 in 10) is not reddened by phenolphthalein; 5 c.c., with two drops of volumetric potassium permanganate solution added, should preserve the red color at least an hour.

0.79 gramme (0.8 c.c.) of pyridine is saturated by 10 c.c. of normal hydrochloric acid.

THALLINUM SULPHURICUM.

Thallin Sulphate.

A yellowish-white crystalline powder, with an odor resembling that of coumarin, and an acid saline, but at the same time bitterish aromatic taste, melting upon being heated, and carbonizing to a heavy but completely combustible coal. It is soluble in 7 parts of cold water, ½ part of boiling water, more difficultly in alcohol, and almost insoluble in ether. The aqueous solution has an acid reaction, turns brown gradually under the influence of light, and gives a brown precipitate with solution of iodine, and a white one with tannic acid; barium nitrate produces a white precipitate insoluble in hydrochloric acid, and caustic alkalies give rise to a white precipitate that disappears upon shaking with ether. A dilute aqueous solution (1 in 100) is colored by perchloride of iron deep green, passing, after some hours, to deep red; fuming nitric acid colors a dilute aqueous solution reddish. Sulphuric acid dissolves thallin sulphate colorless, but upon the addition of nitric acid it becomes deep red, and immediately afterwards yellow-red.

Thallin sulphate should be kept sheltered from light.

THALLINUM TARTARICUM.

Thallin Tartrate.

A yellowish-white crystalline powder, with the smell and taste of thallin sulphate, solu-

ble in ten parts of water, less freely in alcohol, and scarcely soluble in ether. When heated, it melts and carbonizes. The aqueous solution shows the same reactions as that of thallin sulphate, except that it remains unaltered on addition of barium nitrate, and upon the addition of potassium acetate it separates a crystalline precipitate, forming flocks with lime-water.

To be kept sheltered from light.

URETHANUM.

Urethan.

Colorless prismatic crystals, odorless, and having a peculiar cooling taste, melting at 48° to 50° C., boiling at about 170° C., and subliming undecomposed, or, if ignited, burning without residue. Urethan readily forms clear neutral solutions in water, alcohol, ether, and chloroform. In sulphuric acid it dissolves without color; upon heating the solution foams and gives off a colorless and odorless gas. Heated with potassium solution ammonia is evolved.

An aqueous solution (1 in 10) does not become turbid on the addition of silver nitrate; 2 volumes mixed with 1 volume of sulphuric acid, and 2 volumes of ferrous sulphate solution run in on the top, should not form a brown intermediary zone.

A NEW OPERATION FOR CATARACT.

SURGEON-MAJOR GEOFFREY C. HALL describes in the *Indian Med. Journal*, March, 1886, a new operation for the extraction of cataract which is a sort of combination of couching and extraction, the whole idea of which is to extract the lens without disturbing the pupil. It is performed as follows: The patient being chloroformed and the speculum introduced, a large incision is made with a Von Graeffe's knife in the sclerotic about a knife and a half breadth away from the cornea, and the large MacNamara scoop is then passed in and the lens gently extracted in its capsule; atropine is then to be instilled and the eye bandaged up. The formidable part of the operation is the large size of the incision, but in Mr. Hall's experience the wound heals up very quickly without bad symptoms, although in one case he found that he had made the incision too small, and had to enlarge it with the scissors. There were no signs of iritis in any of the cases, although in two the capsule was ruptured, and in the third the incision being made too close to the cor-

nea the iris prolapsed and had to be excised. Surgeon-Major Hall is now having a blunt instrument made with a hook to it which will impinge upon the side of the lens, and then draw it out without pressing upon the back of the iris as the scoop does. It seems possible to insure in this operation as nearly perfect success as can be hoped for from any cataract-operation, the iris, the great bugbear to all eye-operations, being left practically undisturbed.

PRECAUTIONS TO BE ADOPTED IN THE REMOVAL OF RESIDUAL URINE.

At the meeting of the West London Medico-Chirurgical Society, held March 5, 1886, Mr. E. HURRY FENWICK, after briefly commenting upon the various theories which have been framed to account for those cases of rapid death after the withdrawal of residual urine, laid special stress upon three great causative factors,—1. The reflex vaso-motor disturbance of the kidney set up by irritation of the posterior part of the urethra and the vesical nerve plexuses. 2. The introduction of septic material upon, within, or through the catheter. 3. The injurious effects upon the badly-nourished, thin-walled vascular system of the kidney and bladder by the sudden withdrawal of its accustomed water-pressure counterpoise. The precautions he adopted when he introduced a man, however young, into catheter life, were as follows: Absolute rest in bed for a week, cocainization of the prostate and membranous urethra, aseptic catheterism. The withdrawal, little by little, of the residual urine, and the replacement of the same by antiseptic solutions, such as hydrarg. perchlor. 1 in 10,000.

In the discussion that followed the reading of these papers—

MR. DUNN said that the interest of urethral fever was centred in the indefiniteness of its origin. Its accession did not, as experience showed, depend upon any condition which could be predetermined. It followed the simple passage of a catheter, and it was met with where there was lesion of the urethral tract. But he was inclined to believe that urethral fever was always the outcome of absorption. It was evident that in clinical features, in pathological appearances, in etiology, urethral fever and septicæmia were identical. Death from urethral fever was death from septicæmia, because the cardinal features of blood-poisoning were present at the post-mortem examination. It was not

necessary to admit that all rigors following catheterism were the result of septic poisoning. For some of these could be accounted for by attributing them to the manifestation of latent ague, and perhaps this would explain the rigors which have been regarded as having a neurotic origin. Sir James Paget has shown that the aguish attack may be provoked by an operation many years after the patient has suffered primarily from the disease.

MR. BRUCE CLARKE had not noticed any bad results in these cases where the symptoms could be attributed to nervous causes. The more, however, he saw of urinary fever the more he felt convinced that the disease was due to dirty catheters. In a case of residual urine which was under his care at St. Bartholomew's Hospital, the neglect of certain precautions which he always insisted on in regard to the cleanliness of the instruments was followed by serious results. Each patient under his care whose urine is required to be drawn off has a catheter for himself, which is kept, except during use, always in a solution of carbolic acid (1 to 100). He injected brine into the bladder when a tonic and antiseptic was required. He always used a new catheter in special cases. Internal urethrotomy deep down he considered was by no means a safe operation. In preference to performing this he would do external urethrotomy. He was surprised to hear Mr. Fenwick saying that the treatment of a case of stricture by electrolysis had been followed by a severe rigor. He had never in his experience, which was somewhat extensive of this treatment, met with this result, though he had seen one case in which there was a slight rise of temperature.

MR. KEETLEY agreed with Mr. Clarke that catheters should never be used where bougies would suffice. He cited cases to prove that in a considerable proportion of those in which rigors, etc., occurred, they followed the forcible use of larger instruments than the strictured urethra would bear. Deaths from pure nervous or reflex causes were excessively rare in connection with injuries to other parts, and he could not believe that they were frequent after interference with the urethra.

DR. POPE was sorry to learn from Mr. Fenwick that bacteria rejoiced in fat. This fact introduced some difficulty into the case when a lubricant for a catheter was required. He agreed with Mr. Dunn that latent ague was a cause of rigors after catheterism. He had a case under his care at present which bore out this hypothesis.

MR. EDWARDS, in reply, said that external

urethrotomy was more often followed by urethral fever than was internal, for in eleven cases at St. Peter's nine had rigors. Of the three cases he had brought forward, death was due in two to septic absorption. In the other, irritation due to instrumentation of the deep urethra caused reflex congestion of internal organs, accompanied by a rigor. This proving too great a strain for the central arteries, which were highly atheromatous, extravasation, followed by softening, occurred. In all three the urine was normal before the operation, and in the first and second the kidneys were found congested after death. The third case was the first death Mr. Edwards had had in about forty cases of internal urethrotomy. Why pyæmia occurred he could not say, as he took unusual antiseptic precautions by throwing into the bladder an iodoform solution, and by the insertion of an iodoform bougie into the urethra. There was no difficulty nor hitch in the performance of the operation. Concerning the question of ague, it was a well-known fact that patients who had lived in the East, or who had been subject to ague, were peculiarly liable to rigors after interference with the urethra.

EUCALYPTUS AS A TOPICAL AGENT.

In the *Cincinnati Medical News*, April, 1886, DR. P. T. WILLIAMS states that he was led to use eucalyptus as a topical application to the inflamed surface in cases of erysipelas by being told by an old sailor that he had been treated in that way by a physician in one of the East India Islands with most striking success. Dr. Williams reports three cases of erysipelas affecting the face and right leg, another the face, and another the scrotum, in which the application of the fluid extract of eucalyptus promptly arrested the itching and burning sensation, and the exudation of the peculiar gummy discharge.

In a case of caries of the tibia, with extensive inflammation of the skin, attended with the formation of numerous blebs and small ulcers, the happiest results followed upon the local use of the fluid extract of eucalyptus. In the cases of erysipelas it was applied, by means of a camel's-hair brush, every four hours. In the case of disease of the tibia he employed it twice daily. In each case appropriate internal treatment was made use of.

Dr. Williams's experience with eucalyptus as a topical agent, of course, is too limited to base much of an estimate in regard to its value, but the seeming beneficial effects fol-

lowing in the few cases he has mentioned, together with the data already published on this subject in previous issues of the *GAZETTE*, encourage one to believe that it can often be used with advantage locally; that there can be obtained from it all the benefits that are to be had by the employment of the tincture of iodine, solutions of nitrate of silver, salts of iron, etc.; and that it can be made use of when these could not be in consequence of some objectionable features attending their application.

Reviews.

THE PRINCIPLES AND PRACTICE OF SURGERY. By Frank Hastings Hamilton, A.M., M.D., LL.D. Third Edition.

New York: William Wood & Co., 1886.

Professor Hamilton's work on surgery was first issued fourteen years ago; a second edition followed a year later, in which only the typographical errors of the first edition were corrected, and a few statements modified, so that a comparison of the first edition with the present one should give some idea of the advances made in surgery during this interval. At the present time, a decade and a half in the history of any of the sciences or arts is certainly long enough to establish the truth or to demonstrate the error of what has been proposed in theory, and to improve upon what has been found wanting. If there has not been either a theory proven or a deficiency filled, we truly have stood still.

In the author's preface to his last edition it is stated that in order to properly represent the progress of surgical science he has thoroughly revised the former editions of his book, and therefore it becomes our task to briefly note where, in the author's opinion, surgeons have improved in the practice of their art or advanced in the knowledge of their science.

The chapters on inflammation, abscess, ulceration, and gangrene are in no way added to or changed from the former edition of the author's work; indeed, they are word for word the same. The chapter on wounds presents but few alterations, and only such as to more strongly emphasize the author's former views, in so far as they are opposed to the antiseptic dressing of wounds by the employment of the various antiseptic solutions, carbolic acid, bichloride of mercury, etc. Under gunshot wounds a brief account of President Garfield's case has been added. Exploration of the abdominal cavity, in cases of gunshot

wounds, for the purpose of searching for lesions of the various viscera, is not thought to be advisable.

The chapter on venereal diseases remains as in former editions, even to the author's opinion on syphilization. This method of treatment for syphilis was being strenuously advocated by Prof. Boeck about the time Prof. Hamilton's book first appeared. Since that time the fallacy of this means of treatment has been demonstrated, and syphilographers of to-day are united in the opinion that it is wrong in theory and useless in practice.

Chapter xiii., "Lesions of the Nervous System," is, with the exception of the section on tetanus, entirely new. It includes tetanus, shock, section of the nerves, stretching of nerves, and coccydinia. A short description of railroad shock is given, and the author very justly, we think, believes that while the spinal marrow or central nerves may be injured in this class of accidents, it is more frequently a primary injury inflicted upon the ligaments of the spinal column, and that secondarily inflammatory action may be propagated eventually to the meninges and marrow. This explanation is thought by Prof. Hamilton to account for the difference between the injuries to the spine caused by railroad collision and those caused by other traumatisms. Section of the nerves for neuralgic affections the author considers to afford only temporary relief, and resection, while it gives a longer period of freedom from pain than section, has, in his experience, never resulted in a permanent cure. In connection with this subject, there has recently been published a very able and exhaustive paper by Geo. R. Fowler, M.D., of Brooklyn, in the *Annals of Surgery* for April, 1886, entitled "The Operative Treatment of Facial Neuralgia." The following conclusions are reached by this writer:

"1. Neuralgias of the fifth cranial nerve, of peripheral origin, which have resisted methods of treatment other than operative, may be expected to yield to the operation of neurectomy of the trunk or trunks whose branches are distributed to the painful area. In this class of cases the neurectomy should be carried, if possible, to the point at which the nerve makes its exit from the cranium.

"2. Cases of central origin should be first submitted to a limited neurectomy, conjoined with nerve-stretching, in the hope that the process of regeneration thus set up, together with the rest gained by interrupting the centripetally-conducted stimuli, may favorably in-

fluence the diseased central organ. In case of relapse this may be repeated, providing the period of rest thereby gained corresponds to the length of time which Waller's investigations show to be usually occupied by the process of degeneration and regeneration. If no relief is gained, a similar operation should be performed upon all the divisions of the fifth nerve. This failing, a complete neurectomy of each division accessible should be done; and, finally, ligature of the common carotid may be tried as a last resort.

"3. In cases of doubtful origin, a complete neurectomy, followed, in cases which relapse, by ligature of the external and common carotid in turn, hold out the best prospect of cure.

"4. A complete neurectomy of the second division of the fifth necessarily involves the extirpation or destruction of the sphenopalatine ganglion; and to this fact, rather than to any intrinsic tendency of the ganglion itself to keep up the irritation causing the neuralgia, is to be attributed, in all probability, any increasing immunity from relapse claimed to have been obtained in those cases in which Carnochan's operation has been performed.

"5. No patient should be denied, other things being equal, the chance which any one or all the operations in turn may give him of escaping, even for a short time, the intolerable suffering incident to an intractable or otherwise irremediable facial neuralgia."

Esmarch's bandage for the arrest of hemorrhage is mentioned as one of the means which may be employed by the surgeon in suitable cases. Its advantages in certain cases are apparent, its disadvantages the author has not neglected to point out. It is to the latter we would especially direct attention. Acupressure, which in former editions received a detailed description of the various methods for its application, has in the present volume been omitted, since the author, in accordance with most surgeons, believes it should be abandoned. It is with great deference that we venture to differ with the opinion of Prof. Hamilton, obtained by a long experience, and especially upon such an important subject in surgery as the nature of the ligature to be used in the tying of arteries; but, although our experience has not been so extensive, it has, we think, been quite sufficient to thoroughly convince us of the very great superiority of the catgut ligature over the silk. His objection to the gut ligature is in its employment in ligating large arteries. In these cases he thinks it is unreliable, and

therefore secondary hemorrhage may occur. To say this unfortunate accident cannot take place when the gut is used is no more true than to say the same for the silk ligature, since experience tells us it has happened with both; but we do not believe there is any more liability of its occurrence when the gut is used than when silk is employed, and the many other advantages on the side of the gut are, at least in our opinion, so far superior to the silk, that we do not hesitate to utilize it upon every occasion when ligature is necessary.

The chapters on fractures and dislocations remain, without any essential changes, as in former editions of the book; indeed, it would be scarcely possible to improve upon this most excellent portion of Prof. Hamilton's work. The treatment of these lesions is briefly given, and it is on account of this brevity that we recommend it. No confusion or undecided statements are found, but the reader is at once informed what has, in the experience of the author, been found most successful in his practice, and the method of its application is clearly given. We may mention that, in previous editions, the treatment of fractures of the thigh by plaster of Paris was rather favorably spoken of. Now, however, Prof. Hamilton writes, "A further personal experience, together with the personal experience of others as it has come to my knowledge, enable me now to say that the plaster of Paris is not a safe or judicious dressing for fractures of the thigh, either for fractures through the shaft or for fractures near the upper or lower extremities of the bone, for fractures in children or in adults, for compound or simple fractures. Its use under all the circumstances named has been followed by a larger proportion of failures and disasters than any other plan of treatment known to me, such as great shortening of the limb, deformity, non-union, delayed union, gangrene, and death."

The treatment of fractures of the patella by wiring the fragments, with antiseptic precaution, is an operation that finds no favor with our author. From the unfortunate results that have occurred when the operation has been resorted to, he concludes that "such experience renders argument unnecessary."

Prof. Hamilton's opinion of gastrotomy is best given in his own words. He writes, "As a means of enabling the surgeon to dilate, by the finger or otherwise, a stricture of the pylorus, it is, in my opinion, not entitled to one moment's consideration.

"Finally, when made for the purpose of removing a portion of a cancerous stomach, it

is simply an ante-mortem dissection, and has no proper place in surgery.

"Both of these latter statements are made after a study of the reported cases, and with a just appreciation, I hope, of my responsibility to suffering humanity. In neither case can there be anything more than an approximate knowledge of the actual pathological condition and complications, and in neither case can anything but temporary relief be afforded, and that at the imminent risk of immediate death, or of death resulting directly from the operation."

A section on "Lesions of and Operations upon the Gall-Bladder" has been added to the present edition. It treats of abscess of the gall-bladder, fistula of the gall-bladder, and obstruction, concerning which he believes that "in most cases the causes of obstruction will be found to be beyond detection, and their removal beyond the skill of the surgeon." Cholecystotomy, estimated from the ratio of mortality, is thought now to be "accepted as one of the legitimate alternatives of surgery." Cholecystectomy is considered to be a questionable operation. Cholecystenterostomy is said to be "entitled to no further consideration than its mention, and to say that it proposes to substitute a very unsafe and uncertain operation for one which is comparatively safe and certain in its results."

The treatment of stricture of the urethra, after the method especially practised and recommended by Dr. Otis, is strongly opposed by Prof. Hamilton, and he is in perfect agreement with the views of Dr. Ranney, whom he quotes to sustain his opinion. From our reading of Dr. Otis's last work on "Stricture of the Urethra" we are inclined to look more favorably upon his method of treating this lesion. The very extensive experience and the almost constant success in the results of the operation obtained by Dr. Otis, would seem to show that by adopting his procedure we would gain much in our treatment of these cases.

As regards Bigelow's method of operating for vesical calculus, Prof. Hamilton thinks "it would be premature to declare for it unquestionably, at present, superiority over all other methods, notwithstanding it has received the approval of our best surgeons, and has satisfactorily borne the test of considerable clinical experience."

Dolbeau's method for the same affection is thought to have "very little to recommend it, and has not been generally adopted." The method of operating for stone by the supra-

pubic operation remains as it was written in 1872. The procedure of elevating the bladder above the pubes by distention of the rectum should, we think, have been referred to. This operation was first performed in 1880 by Petersen, of Kiel, and since by other surgeons, among whom Sir Henry Thompson may be referred to as one of its most ardent advocates, and in his recent monograph upon this operation he writes, "The high operation for opening the bladder has, in my opinion, been rendered so safe and efficient by certain modifications recently made, chiefly by Professor Petersen, of Kiel, as to deserve the careful attention of all practical surgeons."

Digital exploration of the bladder, performed by means of perineal section, and adopted by Sir Henry Thompson, has not been mentioned by Prof. Hamilton. This oversight is unfortunate, for we believe there is no method so certain to remove the difficulties of arriving at a correct diagnosis, in cases of tumors of the bladder, as the one proposed by Thompson.

Oöphorectomy, or spaying, is briefly described, and from the results obtained in its performance, of the cases published, the author considers the mortality much too great to justify the operation.

Alexander's operation for shortening the round ligaments is disapproved of in strong terms, and, after describing the method of operating, Prof. Hamilton writes, "It seems to me incredible that any person who has acquired even the rudiments of surgical science should perform an operation so unsound in theory, and plainly so unsafe in practice." A paper published in the *Boston Med. and Surg. Jour.* for April 29, 1886, by F. B. Harrington, M.D., discusses this operation. He gives a table of the cases so far reported and the results, which is again an evidence of the want of agreement among surgeons. Thus, there are twenty-two operators who have reported cases, among whom seventeen consider the operation good, four are doubtful, and one believes it bad. The number of cases treated are one hundred and forty-two. Of these, one hundred and twenty-seven are said to have resulted good and fourteen bad. One death only is reported to have occurred in the one hundred and forty-two operations. These results are certainly not in accord with the opinion of Prof. Hamilton, and it seems to us he has been somewhat hasty in forming his conclusions.

Emmet's operation for laceration of the cervix uteri is said to be "not always successful."

It is attended with the danger of sometimes giving rise to a serious and even fatal metritis and perimetritis, and the laceration is pretty certain to be renewed in a succeeding labor."

Laceration of the perineum, according to Prof. Hamilton, whose opinion is based upon an early obstetrical experience and a late surgical experience, is believed, at least the more graver forms of this lesion, to be much more common now than formerly, and this increase he thinks is owing to the more frequent use of the forceps and anæsthetics in labor. For very good reasons, the primary or immediate operation in the treatment of this lesion is opposed. The secondary operation is advocated, and preference is given to silk ligatures.

The chapter on anæsthetics is a very valuable addition to the present volume. Prof. Hamilton thinks "ether ought generally to be preferred to chloroform." The internal administration of stimulants or opiates, either before or after giving anæsthetics, is not thought to be of any benefit. Local anæsthesia, produced by cold or the spray, is considered very limited in its application, and frequently in the first period of their application they occasion pain, so that most patients are willing to submit to the operation without their employment. Cocaine hydrochlorate is mentioned as one of the most recent local anæsthetics, and it is thought that "the intelligent surgeon, understanding its physiological action, will have no difficulty in selecting for its employment the appropriate cases."

Prof. Hamilton has added a supplementary chapter to this edition of his book, entitled "*The art of primary union, or union by adhesion in large wounds, with a consideration of the value of antiseptics in these and other wounds.*" Four conditions are said to be necessary to insure "primary union," or "union by adhesive inflammation," in large wounds. These terms are considered synonymous.

1. "A good, or at least an average, state of the general health, and especially the absence of any systemic infection or dyscrasy."

2. "The removal of all foreign bodies from the wound."

3. The coagulation of the lymph, which is indicated by the glazed appearance of the surface, therefore the wound is to remain open until this appearance is presented.

4. Precaution must be taken not to do any unnecessary violence to the parts, since it tends to increase inflammatory reaction, "and

to carry it beyond the limitations which are assigned to the effusion of emplastie lymph."

Prof. Hamilton further adds, "I believe also that a strict compliance with these rules constitutes the only grounds for the superior success of some surgeons, as compared with the success of others, at the present day; and if their success is greater than that of surgeons who fifty or one hundred years ago practically applied these rules,—and I am willing to concede that it may be, although it is not proven,—it is because they have more exactly complied with the conditions named."

"What treatment," our author asks, "either ancient or modern, has presented a better record than this furnished by Alanson, Syme, Liston, Percy, Lucas, and, so far as we know, by the faithful disciples and distinguished advocates of their practice? It is scarcely necessary to remind the reader that these results were obtained before the introduction of anæsthetics or of antiseptics." From these quotations it is very evident that Prof. Hamilton does not believe in antiseptic surgery, as introduced by Mr. Lister, but it is, he says, "through the agency of one man, Mr. Lister, the practice of union by adhesion was happily restored;" and, again, "the influence of Mr. Lister, backed by his specious theories, secured a return to the old practice of the advocates of primary union in all its essential details, and to this it added antiseptics." This addition of antiseptic solutions is believed by our author to act purely as "moderate stimulants and astringents." The germ-theory is said to be "only a *theory*, and one which is far from being universally accepted."

The conclusion to which Prof. Hamilton is brought from his investigations of antiseptic surgery is as follows: "The conclusion to which we are brought is, that while we are indebted to Mr. Lister for having restored confidence in union by adhesion, it seems equally certain that his excellent results have been obtained, not by a literal compliance with the rules which are the logical deduction from his theories, but by his strict enforcement, in the practical application of his theories, of certain other conditions, which he seems to regard as accessory and incidental rather than of paramount importance."

The differences of opinion in regard to antiseptic surgery are still in existence. This method of treatment from its beginning met with much opposition; but while it has not yet become universally adopted, it has, however, wonderfully added to its ranks, and has gained a foothold in surgery so firm that we

believe it will eventually supersede every other method. We will not venture to assume the position of a judge; in fact, we only speak from our own experience, and are convinced only from our own results. It is on the ground alone of success that we must give credit to antiseptic surgery for better results than we ever obtained without it.

We stated in our first paragraph that the object we had in view was to ascertain what advances surgery has made, in the author's opinion, during the interval between the first and last editions of his book. We have made the comparison, and the reader has the result. Some additions may have been overlooked, but we have endeavored to give all, and our own conclusion, we regret to say, is that, if we are to judge of the progress made in the "Principles and Practice of Surgery" upon the evidence presented by Prof. Hamilton, it has advanced but little.

In concluding our notice, we wish to speak of Prof. Hamilton's work as a whole, and too much praise cannot be given to it for reliability and clearness. The student, for whom the book is more especially written, cannot have a better guide to lead him in the paths of surgical knowledge, and the practitioner will seldom regret having followed the advice given by our author.

J. H. C. S.

THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE EAR. By Oren D. Pomeroy, M.D., Surgeon to the Manhattan Eye and Ear Hospital, etc. 8vo, 413 pp. One hundred illustrations.

New York: D. Appleton & Co.

The fact that Dr. Pomeroy found it necessary to publish a new edition of his work in a little over two years, indicates that the first edition received its due appreciation at the hands of the profession. Evidences of careful revision are frequent, and the changes made represent the advances in the field of otology since the first edition was published. Twenty-nine pages of reading matter and several illustrations have been added, while the beauty of many of the old wood-cuts has been enhanced by recutting.

As was the case with the first edition, the author saw fit to omit a chapter on anatomy and physiology of the organ treated. This is to be regretted, as his descriptive ability might have served him advantageously to present a clear and concise study of a subject usually very difficult to understand. The work begins with a description of the instruments used in the examination of the ear, with hints as to the modes of testing the hearing and an

enumeration of the appearances of the normal drum membrane. The diseases of the auricle are next treated, this being followed by a chapter upon the diseases of the external auditory canal. Before entering upon the discussion of the diseases of the middle ear, the author wisely gives a *résumé* of the affections of the post-nasal space, indicating the methods of treatment to be employed for the eradication of the primary troubles located in this position, so often overlooked. Mastoid affections next receive attention, but few pages, however, being devoted to their consideration. Under the head of "Unclassified Affections" twenty subjects are considered, the syphilitic diseases being included in the series. The book ends with a few pages upon ear-trumpets, the audiphone, and the Japanese fan.

The author's extensive hospital facilities and private practice are used to great advantage to illustrate the value of the therapeutic measures recommended, his vast experience enabling him at the same time to speak in a manner which at once conciliates the confidence of the reader.

As an aid to the general practitioner, Dr. Pomeroy's work is exceedingly valuable. While not exhaustive, which its size, of course, does not permit it to be, it is sufficiently complete to render great assistance in any variety of cases that may be met with. Each subject is subdivided into *subjective and objective symptoms, etiology, diagnosis, prognosis, and treatment*, and, unlike the majority of works, these subdivisions are so strictly adhered to and so well defined that the busy practitioner may be certain of finding under each subheading all the information that the work affords.

The style is terse and to the point, although the frequent and sudden changes from the purely descriptive to the imperative might be considered as objectionable. A few corrections are still needed, among which "Noyes's Polypus Forceps," "Sass's Spray Instrument," and "Cannula" may be cited. These will surely receive the author's attention in the third edition.

We can heartily recommend Dr. Pomeroy's work to the profession, and wish it all the success it deserves.

A GUIDE TO THE PRACTICAL EXAMINATION OF URINE. By James Tyson, M.D. Fifth edition. Philadelphia: P. Blakiston & Co., 1886.

It has, we believe, been less than ten years since the first edition of this small practical manual was given to the world. Books on

diseases of the kidney and of the chemistry of the urine and allied subjects are about as plentiful as herring in season on the coast of Scotland; but the success of this brochure shows that there is always room for one more fish, provided said one be of superior flavor. The present volume has been brought by Prof. Tyson thoroughly up to the advances of the day, so that the fifth edition is even more satisfactory than was the first, and we have no doubt will have equal success.

A REFERENCE HAND-BOOK OF THE MEDICAL SCIENCES, EMBRACING THE ENTIRE RANGE OF SCIENTIFIC AND PRACTICAL MEDICINE AND ALLIED SCIENCES. By various writers. Edited by Albert H. Buck, M.D. Volume II.

New York: William Wood & Company, 56 and 58 Lafayette Place, 1886.

Some months ago we reviewed at considerable length the first volume of this work, pointing out its general scope, and commenting upon its execution. It seems scarcely necessary to do more than to state that the present volume reaches to the end of the letter "c," and that the reader and probably the subscriber also begins to appreciate the comicality of calling this great encyclopædia a hand-book; and we can only reiterate our heartfelt wishes that there was some way of hanging publishers, editors, writers, printers, printers' devils, and all concerned in this misusing, defiling, and bringing to shame what would be called in England the queen's English, but which in this country bids fair to become a mere democratic lingo.

Once having crossed the shakily, tumble-down, miserably put-together, uncouth, wretched bridge of a title into the main pastures of the book, we find the same excellences which we noted in the first volume. The articles upon Mineral Springs are very full and very valuable. The therapeutic articles by Dr. S. Nicholls are condensed, but show a very thorough knowledge of medical literature, and seem to us to be written with judgment. The pictorial features of the book are well maintained by plates for show and wood-cuts for use. The medical practitioner of æsthetic turn and limited means, to whom fortune has assigned a copy of the book, may well cut out the chromo-lithograph of dogwood and frame it to ornament his office. Possibly it is just as well to have this chromo-lithograph inserted in the book as it would be to distribute it as prizes. A picture, which, on account of the pious, resigned expression on the face of the victim, might be used for circulation among the chronically and hopelessly afflicted,

is that of Elephantiasis, in which the trunk and face of an hysterical female are attached to an enormously hypertrophied leg. With closed eyes and folded hands she is commending to the notice either of the reader or of a watchful Providence her misfortunes and her resignation.

To show how carefully the out-of-the-way corners of the medical field are cultivated, we may mention that Dr. Greenleaf's very elaborate article on the examination of recruits for the army occupies no less than fifteen pages, which, on account of the size of the page and the fineness of the print, is enough space for a small treatise.

MATERIA MEDICA AND THERAPEUTICS. By Charles D. F. Phillips, M.D.

Philadelphia: Blakiston, Son & Co., 1885.

In 1882, Dr. Phillips published a work upon the inorganic substances of the materia medica, and, as the pages of the book before us are devoted to the consideration of the materia medica and therapeutics of organic substances, the two volumes form a complete treatise on materia medica. There are in the present book over one thousand pages, occupied with a large, heavy-leaded, pleasant type, and much waste of blank paper between the paragraphs and larger divisions. To those who are accustomed to the artistic medicine books of North America, this thick, stumpy, heavy, unhandy method of publication, so frequent in Great Britain, is especially annoying, but we suppose it is hopeless ever to expect any artistic sense in a people whose ancestors were nurtured among the hyperborean fogs of Frisia. A little care would have reduced, probably by some hundreds of pages, the thickness of the book, much to the comfort of the lap of the student.

Coming to more important matters, we find little to complain of. The style is clear, the author reasonable, and good use has been made of the standard treatises upon the subject: Dr. Phillips is especially to be commended for the honesty which causes his pages to be plentifully spotted over with the names of well-known authors of leading therapeutic treatises. He does not appear to have himself largely read the original literature of the subject, at least as it exists in the German and French languages.

We observe, among other things, that the American drug rhus toxicodendron receives quite a lengthy notice, and is particularly commended in "herpes zoster, pemphigus, and eczema, especially when accompanied by

burning or itching sensations ;" . . . "in erythematous erysipelas, particularly when vesicles and bullæ develop, this is a good remedy." Dr. Phillips also commends rhus in chronic rheumatic affections of the fibrous tissues, and in the after-state of acute rheumatism when the temperature has fallen, but the patient still complains of stiffness and wearing pains. In these cases he applies the tincture in the form of a liniment, and gives it internally in from 5- to 10-minim doses from two to four hours. We believe the drug has been quite largely used in this country by irregular practitioners, and have ourselves employed it internally in four or five cases of subacute rheumatism, but after thorough trials failed in any of these cases to obtain any other effect than irritation of the stomach and consequent loss of appetite.

The book of Dr. Phillips is one evidently intended for students, and we suppose will have in its own country a satisfactory sale. But there do not seem to us in it any sufficiently original features, or any sufficiently active excellence to give it headway in the face of the standard treatises which at present hold the American student market ; nor, indeed, can we see any reason why the American practitioner should add it to the lists of his book-shelves. The activity of medical writers, stimulated as it is by the greed of the publishers, produces now yearly such an overwhelming mass of literature, good and indifferent, that the doctor must needs look carefully as to his purchases. There is an abundance of books of original merit to absorb all the spare cash possessed, except by the most fortunate of the profession. Further, the purchasing zeal of the American public will not be stimulated by the fact that the price of the present volume is \$7.50, so that if the two volumes necessary to complete the work are bought, the cost will be one-half more than that necessary for the United States Dispensary, which probably contains nearly twice as much matter as the two volumes of Phillips.

COCA, COCAINE AND ITS SALTS; THEIR HISTORY, MEDICAL AND ECONOMIC USES, AND MEDICINAL PREPARATIONS. By William Martindale, F.C.S., etc. London: H. K. Lewis, 1886.

This little book is the biography of coca. It gives us its early history, and all the superstitions in regard to it, and we had no idea how many superstitions there were. It seems to have been a sort of royal tobacco. The Incas of Peru chewed it, and the priests,

having no cuspadores, expectorated its juices upon their burning victims. If a citizen became great and renowned, only then did the Inca offer him a chew. They, even, so far from throwing away their quids on entering their places of worship, considered that the divinity was kindest to the man whose cheek bulged out the most. They place it at the present day in the mouths of the dead,—even corpses like it,—and the author quoted irreverently goes on to say, "And when a Peruvian Indian on a journey falls in with a mummy, he presents to it some coca-leaves." Of course, with us, one might take very long journeys and never fall in with a mummy, or fall out either. And, as though the above specimens of literature were not enough, we have a chapter on "Coca in literature." The author somewhat sadly says, "Milton appears not to have known of it." Cowley evidently did, and produced more than a page of dreadful verse, but if one chews some of this leaf he may read the poetry without pain. Milton's case is more sad, for Milton was a poet. He never knew of coca ; if he had he might have shown us Lucifer himself using it to allay his hunger in the realm where fire is plenty but food scarce, or in paradise the Erythroxylon Coca might have figured as the tree of life. Had our first parents partaken of its leaf no hunger would have impelled Eve to the fatal apple. She would have needed no lunch, and posterity would have remained sinless and pure.

E. W. W.

A TREATISE ON BRIGHT'S DISEASE OF THE KIDNEYS: ITS PATHOLOGY, DIAGNOSIS, AND TREATMENT; WITH CHAPTERS ON THE ANATOMY OF THE KIDNEY, ALBUMINURIA, AND THE URINARY SECRETION. By Henry B. Millard, M.D., A.M., Member of the New York County Medical Society, etc. Second edition. Revised and enlarged.

New York: Wm. Wood & Co., 1886.

The author dedicates his work to Drs. J. M. Charcot and M. Debove. The volume, he tells us, is the result of twenty-six years of hospital and private practice and of laboratory study-trial. The illustrations were drawn by himself, with a few exceptions, and he employs the word albumin exclusively throughout the book, leaving albumen to designate the white of the egg. After devoting seven chapters to the anatomy, etc., of the kidneys, chapter viii. discusses the "significance of the existence or non-existence of albumin in the urine,—a question of growing interest and of the deepest importance." That there is a physiological appearance of albumen the author fully believes, independent of its transient ap-

pearance after indigestion, great mental or physical effort, etc. This statement is at variance with the belief of many authorities, who only admit its appearance in persons "apparently" in perfect health. The author, after a long discussion, says, "Where it occurs frequently and in such quantities as the one-fortieth to the one-tenth of one per cent., it may be regarded in the majority of cases as an evidence of renal lesion."

The chapter on "the tests for albumin" goes very thoroughly into the subject. He quotes Méhu as saying that the most albumen he ever found was in less proportion than two and a half per cent.; the common error of overstatement arising from the fact that urine containing 1.5 per cent. will seem to become almost solid. The author rejects in this edition the picric acid test among others, because it produces precipitates "with the parapeptones and all protein compounds." This, however, does not destroy its value as a ready test. So long as no one proves that it fails to precipitate albumen, if no precipitate be found by picric acid, then it has answered its purpose if precipitation occurs; further tests may be employed. After a careful study for two years, the author settles on four tests as best of all, and wants no better, unless it be one to show with precision the difference between albumen and mucin. The four tests are "nitric acid, heat, Tanret's test," and his own test of "phenic acid and acetic acid and potash." In the nitric acid test he pours the urine slowly upon the acid by a pipette. This test he has proved capable of showing one part in 100,000. Tanret's test of the double iodides of mercury and potassium, to be made by the formula given on page 62, will show, the author claims, one part in 250,000, while the author's own test, "which gives him great satisfaction," as our own tests always do,—to ourselves,—"shows one in 300,000 undoubtedly."

The question of casts, their nature, mode of formation, and significance, with general directions for examining for them, is carefully discussed.

The author concludes, from a careful study of Bright's writings, that the name Bright's disease is in general applicable "to those diffuse inflammations of the kidneys accompanied by albuminous urine, either constant or intermitting." He himself considers all varieties of nephritis under three heads,—*"Croupous, Interstitial, and Suppurative."*

In croupous nephritis the author believes the chronic form to be seldom a sequel of

the acute. He doubts whether it ever arises from the acute nephritis of scarlatina for instance. This opinion he subsequently modifies somewhat, and says (page 162), "I am constrained to believe that if the acute nephritis be imperfectly cured, although the symptoms may be wanting for a long time, sooner or later manifestations of chronic nephritis may occur." Malaria he recognizes as a common cause, special irritants, as ginger and cantharidal poisoning, while he doubts the direct action of alcohol in excess as a factor. In regard to the malarial cases of nephritis, he notes that in them albumen is never absent.

Interstitial nephritis the author divides into acute and chronic, though admitting that the recognition of the acute stage will be generally retrospective, like the Hibernian's "prophecy after the event." The acute form he believes to be "due in nearly all cases to cold," or the extension of chronic or severe acute cystitis. We are left by his language somewhat in doubt whether the acute cases "nearly all" so produced are the acute cases which form the first, rarely discovered stage of the chronic cases or not. Damp, cold, and catching cold are the principal causes given by the author. Heredity limits itself as a factor to gouty, tuberculous, or syphilitic cases. Malaria, with repeated chills, in his own experience, has formed part of the history of a considerable number of patients, while he "has not been able to trace a single case to the direct effect of over-use of alcohol." The author recognizes the fact that the gouty paroxysm is frequently associated with albuminuria, and quotes from Charcot, "Albuminous nephritis, when dependent upon gout, is distinguished especially by its apparent benignity and its slow evolution." The question of the action of lead on the kidney is inquired into, and there is a very interesting chapter on the topics of "Nephritis without Albuminuria," and of "Epithelia in the Diagnosis of Nephritis."

Part II. is upon treatment. In acute croupous nephritis, rest, diet, diaphoretics, are recommended; for producing action of the skin, the author uses the hot-air and vapor-bath and jaborandi. When there is insufficient power of left ventricle, convallaria majalis and digitalis. Caffeine ranks with digitalis as a diuretic and heart-tonic; "in venous stenosis, valvular disease, and dilated heart it is better." The author calls attention to the oft-forgotten fact that to derive benefit from saline diuretics the solution must be of less specific gravity than the blood

itself. Tinct. ferri chl. alone, or with digitalis, he gives in feeble heart and impoverished blood, sometimes with cantharides. This remedy, however, he never uses in early periods, but after acute symptoms have subsided. As to the effects of nitro-glycerin, he admits his inability to account for its beneficial action on any plausible theory, but suggests that it acts "through the renal ganglia entirely." In acute nephritis he has not employed it, but in a case of polyuria, with tense, hard pulse, he gave a patient by its means great relief.

The author then gives his opinion of the mercurials, considering them as capable, either "alone, or in combination with other remedies and measures, of curing many cases of acute, and some even of chronic nephritis." He employs generally the mild chloride in interstitial and the bichloride in croupous nephritis, but occasionally the reverse. Though he can give no reason or indication for so doing, it is evidently from instinct that he does so. The mild chloride he gives, triturated with 100 parts of milk-sugar, in doses of $\frac{1}{10}$ to $\frac{1}{20}$ of the salt every two or three hours.

Of the bichloride, he uses a trituration of which 10 grains contain $\frac{1}{1000}$ of a grain of the salt. This is his usual dose, though larger can be given. He knows (page 203) "that the possible effect of such small doses will be regarded by many with incredulity, but their value has been demonstrated, . . . and the recognition of the efficacy of these doses is a matter of simple and assured truth." And adds, "Particularly is this shown in those cases in which the dual action of drugs is manifest, as in the action of corrosive sublimate upon the kidneys in health and disease." And again, page 205, "It is a matter of no slight interest to consider that while corrosive sublimate will often correct pathological conditions characterized by albumin, bloody urine, or suppression, the same remedy, taken in health in toxic doses, often produces those very conditions. I do not propose to descant upon the merits of any theory, still less to support any supposed law of cure." The subject of cantharides gives the author a chance to indulge in somewhat similar remarks. Nitric acid, either with or without mercury, he finds useful, especially in the gouty kidney. Arsenious acid he believes should be a useful remedy "from its action on the kidneys when taken in poisonous doses." In short, the author goes over the whole list of usual and unusual remedies, giving them a full and intelligent discussion.

In the treatment of chronic interstitial nephritis, the questions of climate, diet, general hygiene, mineral waters, etc., are entered into. As to special remedial measures, he would restrict potassium iodide to syphilitic, lead-poisoned, or gouty cases. He suggests that lead also might prove a good remedy, being evidently impressed with the idea that there is but one way of discovering "cures," viz., that the bane is the antidote. But of all remedies after the mercurials he considers the chloride of gold and the chloride of gold and sodium, given in doses of from $\frac{1}{10}$ to $\frac{1}{100}$ grain three or four times a day, as perhaps the best. With him they have "proved of great value."

Throughout the book one is struck by the excellent ability of Dr. Millard as a writer: his style is enticing and his sentences forcible. The illustrations of the book are good in their way, the print and type of the best, and one cannot fail to gather some new ideas on the important subject of which it treats by its careful perusal.

E. W. W.

Correspondence.

THE REMOVAL OF SUPERFLUOUS HAIR BY ELECTROLYSIS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—A report of the following case will be of special interest to all those who read the article on the "Removal of Superfluous Hair by Electrolysis" in the March number of the THERAPEUTIC GAZETTE.

The method which I employed was, with some modifications, the same as that given in that article. Instead of placing the sponge electrode (+) in the patient's hand, I applied it at the nape of the neck, and kept it there constantly, while the electrode needle-holder (—) had an attachment, by means of which I could make or break the current at any moment. I was thus enabled to get along with fewer cells and without loss of time. The pain caused was of no consequence whatever. The needle used was a plain steel sewing-needle of fine quality.

Mrs. W. had for the last ten years been annoyed by a strong growth of hair about her chin and upper lip. She had tried all conceivable remedies, with the result of only increasing the growth through the stimulation thus produced, so that when she came to me for relief she had a beard that would have done justice to a man.

It at first appeared almost hopeless; but, as she was so very anxious to have the growth removed, I determined to undertake the case.

The estimated number of hairs to be removed was fifteen hundred to two thousand, but I soon found that my estimate was too small, the number far exceeding two thousand.

At the first meeting I took out about one hundred hairs, with an average allowance of ten seconds for each hair, and immediately afterwards washed that part with a weak solution of acetic acid, so as to neutralize the alkaline effect of the products of the (—) electrode.

On her return to the office the next day, I found the reaction so very slight that I ventured to take out over three hundred hairs at one sitting with equally good results. The following days I even exceeded this number, so that in nine sittings every objectionable hair on her face was removed.

In not one instance did I apply the needle twice to the same hair, and always applied it to about fifty or more before I stopped to extract them, which is very quickly done, the hairs after the electrolysis being perfectly loose.

After a lapse of about six weeks I found a return of about three per cent., which, after similar treatment, were also completely destroyed, so that now, after seven months, the face of the lady is in excellent condition.

Respectfully,

JAS. A. BACH, M.D.

MILWAUKEE, March 31, 1886.

RHEUMATISM AND CHOREA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Having read several discussions of the question whether chorea was complicated with or dependent upon acute rheumatism, I wish to relate a case falling under my observation. Ida R., aged 15 years, was brought to my office suffering from the worst attack of chorea which I have ever witnessed, the power of speech being lost, and all the voluntary muscles seeming to be involved. I administered strychnine, arsenic, and iron in the usual manner, in conjunction with hydrate of chloral and the bromides. I afterwards visited her at her home in the country, and could see no improvement in her case for a week, until she succeeded by motions and gestures in informing me that she had pains in her wrists and ankles, when I began the use

of salicylate of sodium in 20-grain doses every three hours, and from that time I noticed a marked change for the better at every visit. I had in the beginning of the case endeavored to obtain the succus conii, having seen it highly recommended in the London *Lancet*, but did not succeed till the third week of my treatment; and the chloral and bromide at that time seeming to have lost its efficacy, I began the use of it in 1-drachm doses four times a day, and its control over the disease seemed to be miraculous. The first prescription for the case was made March 16, and on April 20 there were no symptoms of the disease present. My experience with the succus conii fully convinces me of its value in the treatment of this distressing disease.

GEORGE C. IRWIN, M.D.

SABETHA, KANSAS.

A SPECIMEN OF A GERMAN MIXTURE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your issue of April 15, page 286, there appears an article headed "A Specimen of a German Mixture," and stating that up to recent times it was not infrequently prescribed by "heroic German physicians." I have my doubts whether a "heroic" or not heroic German "*physician*" ever prescribed such a mixture, but it is possible it has been prescribed by German *quacks*, as we have German as well as American quacks in the profession, and certainly you will find the largest percentage in the latter.

A regular German *physician* will never use such a second-handed Latin as appears: "Fiat *mistura*, digere secundum artem et filtra." He would say, "Misce, digere lege artis et filtra."

Yours truly,

DR. H. HAHN,
German physician.

HASTINGS, MINN.

Notes and Queries.

SAUSAGE AND PUTRID MEAT POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—May I make the following communication through the THERAPEUTIC GAZETTE? I desire to collect instances of sausage poisoning, or putrid meat poisoning, and should be very grateful to any members of the profession who, having knowledge of any such cases, will be kind enough to com-

municate to me a brief statement of the manner of poisoning, the symptoms, and results. The discovery of ptomaines, and of the probable rôle which they play in tainted meat poisoning, has invested this subject with additional interest, while its relations to sanitary science should secure for it at all times more attention than it seems to receive in our medical literature. With a view of collecting cases for comparison and report, I have made this request, and the assistance indicated will be greatly appreciated.

Very respectfully,

J. U. BARNHILL, M.D.

164 E. TOWN STREET, COLUMBUS, OHIO.

DIAGNOSTICIAL LAPAROTOMY.

At the recent meeting of the American Surgical Association, held in Washington, DR. CHRISTOPHER JOHNSTON, of Baltimore, read a paper with this title (*New York Med. Journ.*, May 8, 1886). He said this operation was as ancient as our race, but in early times was always practised on the cadaver. The *lex regia* of Numa Pompilius required it to be performed upon any woman who died in the twenty-seventh week of pregnancy unless reliable signs showed that the foetus was dead. The first operation on the living subject was probably performed about the year 1600. In abdominal diseases the question arose, How should the seat of the pathological change be reached? The answer was laparotomy, which made the diagnosis positive in cases of doubt, and was preliminary to other operations which might be required. If the surgeon had no right to refuse to give air to a fellow-creature becoming asphyxiated from obstruction in the air-passages, had he the option of refraining from surgical interference when the primæ viæ were obstructed in their functions? The answer to this question hung first upon the diagnosis, sometimes upon the record of the past, and not infrequently upon the wise boldness of the surgeon. The propositions, then, were: First, that for abdominal surgical affections all possible operations ought to be attempted after the establishment of a precise diagnosis; and, second, that when a just diagnosis could not otherwise be reached, it might and ought to be sought out by an exploratory incision. The mortality of abdominal incision without complication was low. The record with regard to diagnostical laparotomy was very brief, for, as a rule, when the surgeon approached the case the diag-

nosis was already nearly positive. The gravity of the operation was largely determined by the time at which it was performed. The abdominal incision intentionally diagnostical was fraught with so little comparative ill consequence that its high value or necessity might be fairly alleged as an established and proper aid to diagnosis. Of all operations involving laparotomy, those involving the uterus and its appendages probably filled the largest space. Next we had those involving the alimentary tract. Speaking of the Cæsarean section, the speaker said that, comparing the mortality of this operation in former days with the mortality of the Porro-Müller operation, we found that, while shock and other dangers were greatly increased in the modern operation, the mortality remained about the same. The old operation was, as a rule, done under objectionable surroundings by inexpert operators, while the modern operation was done by experts with the best surroundings. We had yet to see what the old operation would accomplish when the same safeguards were thrown around it as were given to the newer operation. When was exploratory laparotomy called for? It should be stated that to a certain extent every laparotomy was diagnostical. Two great classes in which exploratory laparotomy was demanded or permissible were to be recognized: First, all sorts of cases in which the diagnosis could not be made without its aid. Second, all cases in which, a diagnosis having been made, no definite line of operation could be marked out, and no abandonment of active measures be entertained or justified. As in these cases laparotomy held the key in all cases of doubt, both as to what was the matter and what was to be done, it should be called upon to surrender that key.

DR. A. VANDERVEER, of Albany, said that simple incised wounds of the abdomen, without injury to the abdominal organs, would usually heal without difficulty, even if left to themselves. The mortality was very slight. Even when the injury was more serious, recovery often followed. The cases which gave us anxiety were those in which the bowel was injured and its contents escaped into the abdominal cavity. These patients died inevitably if nothing was done. In these cases laparotomy should be performed. This view was often opposed by the friends of the patient, and often by the attending physician. We had much to do in the direction of teaching the profession and the public the importance of early operation in these cases. Cases were cited of gunshot injuries of the intestine and

of rupture of the intestine produced by external violence, in which the operation might have saved life if it had been permitted by the friends of the patient. The operation, as a rule, would not be permitted until the patient was in collapse, and it was then too late. If possible, the operation should be done in cases in which it would prove successful, so that the surgeon might have an argument in favor of his recommendation, and the masses must be educated to the necessity of laparotomy in the cases referred to. As to the mode of operation, the incision in the median line was by far the best. In some cases it would be impossible to reach the seat of disease by any other incision. In the closing of the wound some recommended several lines of sutures, uniting the different layers of tissue separately. The speaker did not believe that this was any advance on the old method of using sutures, including all the layers of tissue. Where there was great distention of the bowel with intussusception, the discovery of the seat of trouble was greatly facilitated by a procedure which he had seen Tait adopt in such a case. He opened the distended coil of intestine, permitted the gas to escape, and then closed the opening with sutures.

DR. J. EWING MEARS, of Philadelphia, said that, in considering diagnostical laparotomy, he would arrange the subject in this manner: In the first place, we should use external manipulation; second, internal examination where this was possible; third, aspiration; and, finally, laparotomy. He regarded laparotomy as much the most serious of all these methods. In this discussion the subject of laparotomy as a means of treatment did not call for consideration. The more experience he gained, the greater was his conviction that the abdominal cavity should not be opened without due consideration. Death was a severe penalty to pay for the perfection of the diagnosis. The tendency at the present time seemed to be in favor of opening the abdominal cavity rather than cultivating that essential skill by which the diagnosis might often be made without resorting to operation. Tait's assertions that opening the abdominal cavity was a matter of very little consequence had led many of the younger members of the profession to perform this operation without due consideration. He had at present under observation a case in which he had made out the existence of an obscure abdominal tumor, and had determined that the patient was suffering, possibly, from carcinoma. He had not felt it his duty to perfect the diagnosis by

opening the abdomen. He had carefully watched for symptoms indicating suppuration, when he would operate, not for diagnosis, but to give relief. Having exhausted other methods of diagnosis, he agreed with Dr. Johnston that, if the patient's life depended upon it, we should open the abdomen. He believed that in intestinal obstruction the abdomen should be opened, and that many lives had been lost by want of courage on the part of the surgeon. There was no question as to the duty of the surgeon in the case of gunshot wounds of the intestines.

DR. CHARLES T. PARKES, of Chicago, thought that the paper insisted upon the necessity of exhausting all other methods of diagnosis before resorting to laparotomy. In regard to the size of the incision, he thought that made very little difference so far as the final recovery was concerned, but, where the incision extended above the umbilicus, recovery was slower, and attended with more inconvenience. In the cases which he had seen where a post-mortem followed, there was no evidence that the abdominal incision had anything to do with the fatal issue. In regard to the operation in cases of intestinal obstruction where the exhaustion was extreme, several years ago he was called to see a case of nine days' standing. The patient was in a state of extreme collapse. He was anæsthetized and the abdomen was opened. A small cyst was felt immediately beneath the fingers. Under slight pressure it ruptured, and a quantity of offensive pus escaped into the abdominal cavity. This patient recovered. In such a case the best diagnostic skill could not determine the cause of the obstruction. In the case of a child 18 months of age, in which the operation was declined, the post-mortem revealed intussusception of the small intestine, which was without adhesions, and could readily have been overcome. He thought the abdominal opening should be made in the median line. In regard to closure of the wound, the simple suture passing through all the tissues had been followed by such good results that he thought we need use no other. Where there was much distention of the intestine he considered the method by opening the bowel the best. He had used the exploratory needle on several occasions, but it was necessary to make a number of punctures. In two instances he had found extravasation of fecal matter through these punctures.

DR. L. McLANE TIFFANY, of Baltimore, remarked that during the last year he had met with four cases of what he believed to be

intestinal obstruction. In all four laparotomy was proposed. Two patients refused, and both died. Two accepted, and one of these recovered. The one that died was a woman aged 73, in whom the obstruction had lasted seven days. The intestine was enormously distended, and in the examination ruptured with the escape of the gas. After this it was extremely easy to find the seat of constriction. He thought the shock would be less if the intestine was emptied. In regard to the time at which the operation should be performed, no positive rule could be laid down. It must depend upon the acumen of the physician who saw the case. He agreed with the reader as to the great value of laparotomy as a diagnostic operation. It was not possible for any human being to recognize through the abdominal walls the manifold conditions of the organs present. In regard to pistol wounds of the abdomen, it frequently happened that the intestines escaped injury, and in these cases it was a question when the operation should be done. The opening of the abdomen would not, he thought, do much harm.

DR. J. F. THOMPSON, of Washington, wished to record two cases of laparotomy for the purpose of diagnosis. A woman, aged 35, had the history of an abdominal tumor lasting for several years. It presented the appearances of an ordinary ovarian tumor, with the exception that it had two sinuses communicating externally. After frequent examinations by various surgeons, it was decided to make an exploratory operation. One sinus was traced back to the peritoneum without reaching any satisfactory explanation of the tumor. The peritoneum was then opened and the finger introduced, but no tumor in the cavity could be felt. Toward the abdominal wall a mass, apparently imbedded in the tissues, could be distinguished. The wound was closed, and the patient recovered from the operation. She subsequently died, and the post-mortem showed that the tumor was an enlarged spleen, which had fallen down below the umbilicus and become attached to the abdominal wall.

The second case was one of carcinoma, involving the transverse colon, running directly through the mass. There was also an attachment of the growth to the liver. The abdomen was closed; the patient recovered from the operation, and was still living.

DR. W. H. CARMALT, of New Haven, said that, some time ago, he was requested to operate in a case of intestinal obstruction, but the collapse was so great he thought that

it would not be proper to do so. Within thirty-six hours the patient died. The post-mortem showed that the obstruction was due to a band of adhesion. If the operation had been performed early, the patient might have recovered. He considered it important to relate unsuccessful as well as successful cases.

DR. JOHNSTON, in closing the discussion, said there was a certain amount of hesitancy on the part of surgeons in regard to operating in cases of abdominal injury, on account of the people and on account of juries. To overcome these objections, it was necessary to educate the public to the true state of affairs. In cases where the bowel was opened, laparotomy led us to the seat of disease, and, if anything could be done, we were then able to do it.

CALOMEL AS A DIURETIC.

The action of calomel in causing diuresis in morbid conditions with dropsy is not generally recognized. In health, indeed, it may be said that the drug has no such action. DR. JENDRÁSSIC has found in cases of cardiac dropsy that calomel in appropriate doses causes well-marked diuresis, a "sort of diabetes insipidus," by which the results of want of cardiac compensation, dropsy, and oedema are dissipated. The effect comes on within twenty-four hours, $1\frac{1}{2}$ grains of the drug being given three to five times a day. No diarrhoea is usually produced; but in some cases it had to be prevented by the administration of laudanum. Salivation and stomatitis were obviated by the prescription of a chlorate of potassium gargle from the first. The result in all cases in which the treatment was adopted was beneficial, no unfavorable depressing symptoms being noticed.—*British Med. Journ.*, February 13, 1886.

BACTERIAL PATHOLOGY.

With the conviction that a little humorous dessert will contribute to the digestion of the numerous therapeutic dishes served to our readers by the GAZETTE, we present to them some choice morsels picked from DR. NORDAU's interesting Parisian epistle to our Viennese contemporary, the *Wiener Med. Wochenschrift*, No. 8, 1886:

"The last of the valiant and dreaded enemies has surrendered. Stricker has hoisted the white flag and entered the camp of the microbio-pathologists with flying colors. He was one of those who had fought most bit-

terly and more persistently against the new faith, objection to which is at the present day only excusable in the man born blind, for he alone is not open to the *ante-oculos* demonstration of the microscope, the test-tube, and the pure-culture. But lo! there is still one pagan knight who is not to be converted, not to be conquered. Boldly and proudly he upholds the banner of the humoral (or is humorous now the proper adjective?) pathology. Not he that fears the impinging phalanges of the bacilli, shrinks before the spirillæ pickets, or loses his sang-froid at the approach of swarming spirochetæ. This knight *sans peur et sans reproche* is Peter, Prof. Peter, of the Faculty of Paris. Like Horatius Cocles, he fights alone against an army. Maybe, however, he only wishes to carry out Victor Hugo's heroic words: 'Et s'il n'en reste qu'un, je serai lui-là!'—And if but one is to remain, it shall be I. We all know of the reverend Pastor Knack, who bravely called Copernicus a liar, and defended the rotation of the sun around the earth. Knack's death was a hard blow to the humorous papers, still Peter is alive, that is some substitution. Peter's opening lecture of the last winter course, before the crowded auditorium, will remain forever memorable in the annals of medicine. Though it was full of *chic* and Attic salt, it cannot be said to have been seasoned properly, for the carnival was not to commence for some months yet."

We regret that our valuable space cannot be more exhaustively devoted to the amusement of our readers; a brief abstract of some few passages of Peter's lecture, which, intending to ridicule Koch, Pasteur, and Lustgarten, the discoverer of the syphilis-bacilli, ridiculed actually Peter alone, is all we can give:

"The bacillus discovered by the 'Berliner Koch' (why not the Prussian Cook?), and about which so much 'fuss' is made, has no diagnostic value, as it is found in tuberculosis, syphilis, leprosy, and even the preputial smegma of healthy persons. True, there are some trivial differences in these bacilli as to form and coloring matters, but what does that signify, as bacteriologists admit themselves that morphological differences play no essential rôle in the determination of the nature of a bacillus.

"What deplorable therapeutic results are there not ensuing from the views of the microbio-pathologists! They separate externally the tubercular subjects, and internally they give them alleged bacillus-killing drugs,

such as creasote, carbolic acid, and heaven knows what other dirt. ('Et on ne sait quelles saletés.') I shall not cease to fight with word and letter against this mental aberration which confuses the brain of profession and laity alike."

No wonder that the impulsive youth from the quartier Latin brought a thundering ovation to their enlightened and courageous teacher, who had thus disproven and conquered definitely the "Berliner Koch."

In conclusion, we have yet to allude to the nonsensical tribute paid to Peter by the *Evénement* (a Paris newspaper), which brought the picture of Peter in the rôle of George the Dragon-killer, and proclaimed at the termination of an article exornated with the usual Gallic *élan* and prestige, "And so has the common sense of the Frenchman again annihilated a chimerical product of German brains."

MORPHINE IN THE TREATMENT OF CONVULSIONS OF INFANTS.

DR. GEORGE T. FANNING, of Stony Brook, N. Y., reports in *The Medical Record* (April 24, 1886) the two following cases of convulsions in infants, in which morphine was given with ultimate good results. The first case was that of a girl, 2 years of age, who, when first seen, had been in rigid convulsions for about two hours. Potassium bromide and belladonna were given at short intervals for nearly three hours without relief, when it was determined to try morphine, and a dose of $\frac{3}{8}$ th of a grain was accordingly given. In about half an hour the convulsions stopped, and the child stopped breathing at the same time. Artificial respiration was at once begun, and kept up for nearly an hour, at the end of which time natural breathing began again. The second case occurred in a boy, $2\frac{1}{2}$ years old. Supposing the convulsions to be due to intestinal irritation, Dr. Fanning ordered an emetic and an enema, and gave chloroform to relax spasm. The convulsions ceased, and the writer went away, but was recalled in about an hour, the messenger stating that the child was worse than ever. He was found in a very rigid condition, with one pupil widely dilated and the other contracted. After an unsuccessful trial of chloroform, $\frac{1}{8}$ th of a grain of morphine was given hypodermically, and in an hour $\frac{1}{4}$ th of a grain more. The pupils both became contracted, the breathing was slow and stertorous, but the convulsions continued on one side. The chloroform inhala-

tions were continued for about two hours, when improvement occurred very slowly, and the child finally recovered.

A CASE OF COMPULSORY AND EXCLUSIVE BACKWARD MOVEMENT.

In *La Rivista Clinica* of June, 1885, Dr. MAZOTTI reports the following rare case: An alcoholic, 66 years of age, was admitted into the hospital of Bologna for the treatment of scurvy. After his recovery from this affection, it was found that, in spite of the greatest efforts, he could only walk backward, and that after that he had to turn around his own axis. These movements, of course, constantly imperilled his life. He soon succumbed to pneumonia, and the examination of the brain showed an atheromatous condition of the vessels at the base. We wonder that the inspection of the spinal cord was omitted, which might have given some clue for these peculiar symptoms.

A CLASSICAL REMEDY FOR HICCOUGH.

DR. A. G. GIBSON calls attention in the *Edinburgh Med. Journ.*, April, 1886, to the old Hippocratic aphorism, "Sneezing occurring after hiccough removes the hiccough," and suggests, in cases of hiccough, the production of sneezing by tickling the nostrils, and he tells us that he has in this way been very successful in the arresting of this disagreeable affection. Hiccough, as well as sneezing, is one of the specially modified respiratory movements, and it is quite in accordance with what we know of the transference of nervous action, that the spasmodic contractions of the diaphragm should cease on the induction of the explosive expirations which constitute the acts of sneezing. There is one point, however, which deserves special mention. It is not necessary that the stimulus applied to the nose be followed by sneezing. The application of a gentle irritant to the nasal mucous membrane may be quite enough to put a stop to the hiccough, by diverting the nervous energy into other channels, although it may not be of sufficient power to induce sneezing.

A CASE OF CHROMIDROSIS, OR CHROMOCRINIA.

DR. FÉREOL communicates to the *Bull. de l'Acad. de Méd.*, 1885, No. 33, the case of a

hysterical young girl, who, at times of nervous excitement, presented a peculiar blue coloration of the under eyelids. There was no perspiration observable during the appearance of this phenomenon. The blue color could be readily removed by vigorous rubbing with a cloth, but grew more intense whenever the girl's attention was directed to her condition. In the axilla and over the sternum Féréol likewise occasionally noted this coloration. Examined microscopically the fragments of the pigment presented an appearance similar to the particles obtained by breaking up dried Canada balsam. The dried epidermic cells contained besides numerous granules of a bluish coloration.

THE EMPLOYMENT OF LACTIC ACID AS A CAUSTIC.

In the *Centralblatt für Chirurgie*, No. 12, 1885, Prof. Mosetig made the following astonishing announcement, "Acidum lacticum is a means of destroying morbid tissues, and distinguishes itself from all other hitherto known and employed caustics by sparing the healthy tissues."

It is, however, a well-known fact that all caustics destroy far more easily morbid than healthy tissues, and besides, the mentioned property of lactic acid is now disproven by the experience and publication of Drs. SPITZER and HERMANN, of Vienna, in the *Wiener Med. Blätter* of February 25, 1886.

These observers publish eight cases of lupus and epithelioma treated in the Allgemeines Krankenhaus in Vienna with concentrated lactic acid as proposed by Mosetig, and state their conclusion as follows:

1. The pain produced by the cauterization with lactic acid is at least as great as that caused by any other caustic.
2. The patients prefer invariably any caustic to lactic acid.
3. The action of lactic acid resembles that of other caustics, but is less energetic.
4. Healthy tissues are not spared any more by this than by any other caustic.
5. Lactic acid has to be employed for a much longer time than chloride of zinc and other energetic caustics.

In this connection we would call attention to the reports published in recent numbers of the *GAZETTE* where a large number of authorities were quoted as claiming most favorable results and confirming the statements of Mosetig-Moorhof in all particulars.

— THE —

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Original Communications.

AN ADDRESS ON EVOLUTION AND THE PATHOLOGICAL IMPORTANCE OF LOWER FORMS OF LIFE.*

BY PROF. JOS. LEIDY.

GENTLEMEN:—I open my topic with an asseveration from the "Cosmic Philosophy" of that clear thinker, John Fiske, of Cambridge, "There is a Power to which no limit in time or space is conceivable, and all phenomena are but manifestations of that one

eternal and infinite power." It is this Power which is everywhere recognized as God, whose existence is proclaimed as the Supreme Truth alike by science and religion.

The genesis or original production of life is directly attributed to God, but the manner of its creation has always been and still remains a mystery. With the introduction on earth of a primitive form, or kind of living being, science is prepared to explain the subsequent production of all others, which, from the remotest period through successive ages down to the present time, have exhibited an infinite number of kinds of the most variable degrees of complexity, culminating in man and his contemporaries. The explanation is found in the doctrine of the evolution of life,

* Delivered before the Graduating Class of the Medical Department of the University of Pennsylvania, May 1, 1886.

which is in accordance with the general law of evolution as propounded by that greatest of philosophers, Herbert Spencer. This general law, like that of gravitation, appears to apply to everything, and as the planetary system seems to have been evolved from ancestral nebulae, so all existing forms of life appear to have been evolved from organic dust, as first clearly set forth by that profound naturalist, Charles Darwin, who has recently left us, we may hope, for a still higher evolution.

According to the doctrine of the evolution of life, living beings have been derived from one another, the most complex and highest forms of plants and animals being the slowly modified descendants of less complex plants and animals, while these were the slowly modified descendants of still less complex forms, and so on until we go back to the earliest and simplest plants and animals.

The agencies by which the process of evolution is carried into effect are of the kind we daily observe in operation around us, as the incessant individual variation in plants and animals, their adaptation to enviroining conditions, and the hereditary transmission of acquired individual peculiarities.

The prevailing hypothesis of the origin of living creatures in all time, and still maintained by the greater but generally less informed and less thoughtful portion of society, is that each and every species of plant and animal was a special or direct creative act of the Creator. Thus, in illustration, it is considered that each and every species of oak and pine, of fish and bird, was a direct act by which it appeared in space independently of any pre-existing form. Those adopting the law of evolution see in all races of men one brotherhood, while those holding the doctrine of special creations, like the late Prof. Agassiz, are driven to the necessity of regarding each race as a distinct and separate creation.

The first revelation of the law of the evolution of life startled people from a revery. The doctrine for a time was accepted by few, and even reluctantly or with qualification by some of these, but generally it was rejected, pronounced incredible and absurd, and frequently became the subject of ridicule. Many, without reflection, made their feelings an objection to the theory; and even a distinguished professor of the Jardin des Plantes, of Paris, in a public lecture, thought he was using a powerful argument against it when he contemptuously stated that neither he nor his

audience wanted an orang for their grandparent.

The reception of new theories, or systems intended to convey general truths, has always been the same, and men never seem to be prepared for any unusual disturbance in the habit of thought. When Newton announced the law of gravitation, people objected to it, for they regarded it as a denial of God's control of the movements of the universe; and when Franklin suggested the use of the lightning-rod, it was denounced as an impious attempt to deprive the Deity of his thunderbolts. Often, to be sure, hasty judgment leads to false theories, but should the theory be true, sooner or later, despite all obstacles, it is accepted and added to the common stock of knowledge.

Time for due consideration and reflection, together with many new observations and discoveries in biology bearing on the subject, tend more and more to confirm the theory of the evolution of life, and I believe the doctrine is now sustained by most distinguished naturalists, and is accepted by a large portion of the educated and thinking community.

While the special creation of living beings cannot be clearly realized in thought, the production of the most complex and highest forms from the lowest and simplest forms, through the slow accumulation of change upon change, and by slow divergences which result from the continual addition of differences to differences, is readily conceivable. In like manner, as we may observe improved and conspicuously marked varieties of useful plants and domestic animals derived from inferior stocks through appropriate management, we can see that under similar conditions the various species of animals and plants now existing may have been derived from nearly allied forms of the age immediately preceding the present age. In this manner, for example, we can comprehend how, by gradual modification, the living species of elephants are the descendants of the nearly allied extinct species; and how our domestic horse and ass are the successors of a three-toed ancestor which has ceased to exist. While such a view of the origin of animals appears probable and clear, it seems impossible to realize how they could come into existence from empty space.

Withal, the law of the general evolution of life is not so extraordinary as is commonly supposed, and is really no more wonderful than the special evolution we observe incessantly going on around us in the develop-

ment and growth of every individual plant and animal. The earliest manifest germ of each seed and egg is a single microscopic cell, from which in a little space of time is evolved each and every form of living being, including man himself. Surely, then, if a single, simple organic cell shall, in the course of a few days, months, or years, result in the production of a moss, an oak, a worm, a fish, or a man, there certainly can be no improbability that a like cell, in the course of untold ages, may have been the ancestor of all existing forms of living beings. The infinite and mysterious power of the Creator is alike manifest in the development of each and every seed and egg, in the evolution of each and every specific form of life, and in the original production of that primitive and lowly form from which all other forms have been derived.

In the production, growth, and development of living bodies, the ultimate chemical elements of structure are derived from the mineral kingdom, where they compose the earth, water, and atmosphere. Living bodies are, however, composed from complex combinations of these elements, which originate in a common material which does not pre-exist in the mineral kingdom. This common material, named protoplasm, is distinguished as the physical basis or substratum of organization. It is a complex definite compound of the gaseous elements of the air and water with the solid elements carbon and sulphur. I repeat that it is nowhere to be found in the mineral kingdom. The skill of the chemist has failed to produce it, and science knows no efficient cause for its production other than God.

The amount of protoplasm required in the construction of organic bodies is enormous, is incessantly consumed in the requirements of life and in the death of living bodies, and is as incessantly renewed. What is the source of all this protoplasm?

Science has discovered the fact that protoplasm is produced under the influence of the solar ray in the green plant, which manufactures it from inorganic elements, chiefly water, carbonic acid, and ammonia. The animal takes no part in its production, but, on the other hand, consumes it, and returns the inorganic elements to their original source. Every tiny chlorophyll ball is a laboratory for the production of protoplasm, starch, and other important organic materials, and thus it is that the bright green verdure of the earth, which so delights the eye, is the com-

mon source of the material which is the basis of all organization. Though the sun is distinguished as the source of life, it is only one factor in its production, and would be powerless to this effect without the green plant endowed with special attributes by its Creator. All green plants are immersed in their food, the air, water, and earth, and hence they are commonly fixed or rooted to their place of birth. Animals, powerless to produce the material of their composition, are endowed with locomotive power to enable them to apply to the fixed plant for their food, or to wage war and prey upon one another for the same purpose.

As the only direct source of protoplasm is the green plant, it necessarily follows that in the order of origin this must have preceded the animal, and if we admit the doctrine of the evolution of life, of the highest from the lowest forms, the simplest of green plants is the all-sufficient element for the production of all organic forms.

An ancient and still prevalent doctrine among naturalists, philosophers, and others, holds the theory that the beginning of life proceeded from the waters. The facts of science go to show that the green plant, which in its origin preceded the animal, finds the most favorable conditions for its life in a moist atmosphere and in bright sunlight. Few green plants grow in the ocean waters below one thousand feet, and none below double that depth. In the language of the Bible, after the waters were "gathered together" and the "dry land" appeared, *then* "the earth brought forth grass." This seems better to accord with the condition most favorable to the production, development, and continued evolution of life. At the boundary of the islands or continents, as they emerged from the waters, the earth was maintained in a moist condition by the proximity of the ocean, and there the influence of the sun was all that was required in the production of the material basis of life.

In accordance with the doctrine of the evolution of life and its known conditions, we may reasonably infer that the first living being was the simplest green plant, which also may continue to exist in its original primitive form in our day. The law of evolution does not imply the necessity of change or transformation of the primitive form. While the process may go on under a change of circumstances, and many of the new forms undergo transformation after transformation, advancing in complexity, and acquiring new

habits and capacities, others, from the first, or after more or less progress, may deteriorate, become degraded, or dwindle away and become extinct, while others, again, may retain their original form, or any subsequent one, through all future time.

As illustrations of advancement even to a highly complex organization, and a subsequent retention of the form without manifest change through successive ages, we may refer to the animal *lingula*, whose remains are found in the Lower Silurian rocks, composed of the sediments of the ocean, and estimated to have been deposited millions of years ago, but which yet lives, apparently unchanged, on our Atlantic shore to-day. Likewise, the roaches and the scorpions of our time have their recognized ancestors in the ancient coal-bearing rocks; and the fish *ceratodus*, originally made known to us by Prof. Agassiz, from remains in the Jurassic and Triassic rocks, has recently been found, living in the muddy streams of Queensland, Australia.

Among the almost endless variety of living forms now existing is there one which answers all the conditions required by the law of evolution, and which may be recognized as the first-born of creation and that from which all subsequent forms of life have sprung? I repeat that if a single, microscopic cell, the germ of the seed or egg, under the usual appropriate conditions, shall, in the course of a brief space of time, end in the development or production of an oak or a man, there is certainly no improbability that a similar cell may have in the course of ages resulted in the evolution of all existing forms of living bodies.

The first-born of creation, I conjecture, we may recognize in the tiny green plant described by botanists as the *protococcus viridis*. It grows all over the world in the presence of a certain amount of moisture, warmth, and sunlight; and under these conditions is everywhere observed in shaded places, appearing like a coat of green paint on the north side of tree trunks, rocks, walls, fences, pavements, and the earth. Each individual plant is a single microscopic, spherical cell, enclosing a mass of chlorophyll, and it incessantly and rapidly multiplies by growth and segmentation. Readily detached from its position in the dried state, it is scattered as dust by the winds, and, when deposited in favorable positions, it is instantly restored to activity, and again reproduces itself.

In this most humble of green plants—the *protococcus*—we have the original type of

life, if not actually the first-born of created beings. A simple plant, endowed with the same wonderful capabilities of every seed and egg, it has been the progenitor of all succeeding forms of life, both plant and animal, culminating in man. The suggestion that *protococcus* is the first-born of created life and the progenitor of all subsequent forms to the highest, will no doubt excite a smile of incredulity; but if we admit the law of evolution of life it cannot be disputed that it is the all-sufficient element in the process. To Raspail, the French chemist, it furnishes the cell with which, if he were supplied, he said he could build up the whole organic world. In the evolution of life, *protococcus* is the first manifest step which accords with the declaration that "God formed man of the dust of the ground." I may add that in this we may see an illustration that between Science and Religion there is no conflict. It is in the interpretation of facts rather than in the facts themselves that the difference chiefly consists. The shield is altogether of silver or altogether of gold, as it is viewed from the one stand-point or from the other, but, after all, it is the same shield.

In the course of the evolution of living beings, a multitude of inferior organisms have come into existence, which prey upon superior organisms, are more or less hurtful or destructive, and are the chief causes of disease, suffering, untimely death, and decay. In regard to these consequences, Mr. Spencer remarks, that "if, in the uniform working out of the process, there are evolved organisms of low types, which prey on those of higher types, the evils inflicted form but a deduction from the average benefits. The universal and necessary tendency towards supremacy and multiplication of the best, applying to the organic creation as a whole as well as to each species, is ever diminishing the damage done, tends ever to maintain these most superior organisms, which in one way or other escape the invasions of the inferior, and so tends to produce a type less liable to the invasions of the inferior. Thus, the evils accompanying evolution are ever being self-eliminated. Though there may arise the question, Why could they not have been avoided? there does not arise the question, Why were they deliberately inflicted? Whatever may be thought of them, it is clear that they do not imply gratuitous malevolence." (Prin. Biol., i. 354.) Of the inferior organisms which are detrimental to the superior organisms are the numerous animal parasites of other animals,

generally belonging to the class of worms, and called *entozoa*, from their living within animals, or intestinal worms, from the usual position in which they are found. Frequent and distressing, and often fatal, as are parasitic animals, they are far exceeded in subtle character, and in dangerous and destructive qualities, by the fungi. These are familiarly known as mushrooms, toadstools, moulds, mildew, rust, smut, and rot, and are relegated by the biologist to the vegetable kingdom, though they greatly differ in appearance, habit, and capability from green plants. They neither feed in the same manner as the latter, nor are they direct manufacturers of the chief organic elements. They prey on dead or dying plants and animals and their products; they are the ghouls of the organic world,—thugs concealed in darkness, and ever on the alert to strangle the traveller. As bacteria, they constitute the most degraded forms of living beings, and at the same time are the most potent agents in the production of pestilence, death, and decay.

Until recently fermentation and putrefaction were considered to be due to the exposure of organic substances to the combined influence of moisture, warmth, and air, but it has now been determined that the direct agents in these processes are microscopic fungi floating in the atmosphere, and that they will not occur without the presence of these organisms. Ordinary fermentation, as in the production of beer, wine, and other spirituous liquors, is due to the growth and reproduction of the yeast-fungus, *saccharomyces*, which decomposes the sugar present in the vegetal juices and converts it into alcohol and carbonic acid. The souring of fermented products, and their further changes, are due in like manner to the presence of other fungi. The putrefaction of meats, with its attendant disagreeable odors, is caused by the bacterium *termo*, and does not take place when access of this fungus is prevented. The decay of wooden buildings and other structures of timber is ordinarily due to fungi, commonly known as "dry rot," and consisting of species of *merulius* and *polyporus*. The blights, mildews, smuts, and rusts which are such enemies to the agriculturist, destroying his grain, fruit, and other vegetal products, are all fungous parasites.

Most wonderful and frightful is the power for evil of these corsairs in the sea of life. Differing in well-marked and decidedly important characters from green plants on the one hand, and animals on the other hand,

they may be regarded as forming a third and distinct kingdom of organic bodies. Only lately we have learned of a new phase in their career in relation to green plants, not destructive as usual, but in habit reminding us of the system of slavery previously observed only with man and certain species of ants. The researches of botanists now make it appear that the group of plants named lichens, those dry, gray crusts and threads which grow on the dead bark of trees, old timbers, rocks, and otherwise sterile grounds, are parasitic fungi, which entrap green algæ, like *protococcus*, and hold them in their toils while they feed on the products of their labor, the enslaved algæ in the mean time pursuing their ordinary course, and multiplying, as formerly among our own kind did the slave families of men.

Aside from the too familiar fact that man and other animals are infested with *entozoa* which produce more or less inconvenience and distress, and frequently disease ending in death, it has been made obvious to us in our time that more serious and wide-spread diseases are due to fungous parasites. Indeed, it is now the prevailing idea that most if not all infectious and contagious diseases are of parasitic origin. Various forms of microscopic fungi, of the order of bacteria, exemplified by the genera *micrococcus* and *bacillus*, have been discovered to be constant attendants on such affections, and in many instances have been demonstrated to be the agents by which the diseases are conveyed.

Louis Pasteur, the renowned French chemist and skilful investigator, on whom the eyes of the whole world are now directed on account of the thoroughness and success of his researches into the causes and prevention of some of the gravest diseases which afflict our race, declares that it is in the power of man to completely sweep parasitic diseases from the face of the earth. Perhaps the declaration may be too strong, yet it seems that the demonstrated facts are already sufficient to make us hopeful that we are on the threshold of discovery, by which we shall be enabled to bring the agencies of these diseases so far under control as to render them of no greater detriment than the ordinary accidents to which we must always be more or less liable.

A few significant facts may be mentioned in evidence that our expectations and hopes are neither visionary nor even exaggerated.

Only fifty years ago nothing was positively known as to the manner in which man and inferior animals became infected with para-

sitic worms. While the conviction of many was that all forms of living things were derived from parents, as expressed in the axiom *omne vivum ex ovo*, others openly or tacitly admitted their existence as evidences of the hypothesis of spontaneous generation. Well do I remember the time when an able teacher expressed the opinion that a shred of fibrin or mucus under certain morbid conditions might be transformed into a tapeworm; and another considered that maceration in water was sufficient to convert a horse-hair into a hair-worm or gordius. Since then many able investigators have most indubitably proved the doctrine that all organic forms, the simplest as well as the most complex, originate alone from parents. We have learned that parasitic worms, like ordinary insects, flies, butterflies, and beetles, pass through entirely different forms in different stages of their life, and that the different stages are passed in different animals into which they gain access through the food and drink. With these discoveries we have also learned the sure method of controlling and preventing the invasion of parasitic worms. By the proper cooking of food and the boiling or filtration of drinking water any parasites which may be present are destroyed, or prevented from entering the person they would otherwise infest. Man, perhaps unintentionally, has been freer from parasitic worms than most other animals, from the peculiar habit of using fire in the preparation of food, though he is often yet too careless in the employment of this agent, and thus frequently becomes the host of disagreeable or dangerous guests introduced through half-cooked meats.

I recall to mind an occasion upwards of forty years ago, while I was a student assisting my preceptor, Dr. Goddard, then demonstrator of anatomy in the University, and prosector to Prof. Horner. We were making preparation for a lecture on the muscles, when Dr. Goddard, who was endowed with quick perception and sharp vision, observed an appearance in the flesh which led him to examine it with the microscope. In it he found a number of minute, coiled worms, to which he called the attention of Prof. Horner. The parasite had been discovered a short time previously by the English surgeon, Sir James Paget, and was described by Prof. Owen, with the name of *trichina spiralis*. Several years later I found the same parasite in pork. Then, and for some time subsequently, no significance was attached to the occurrence of *trichina* as a parasite, and if you will refer to

any medical dictionary published twenty-five years ago, you will find the worm mentioned, but no intimation of its relation to a grave disease which has since been recognized, but was then not even suspected. Now we are well informed of the parasitic affection trichinosis, caused by *trichina*, introduced into our body in pork, a meat which was declared to be unfit for food, thousands of years ago, by the great law-giver Moses. While *trichina* has been dealing death and destruction to our kind from the most remote times, until recently its existence was unknown, but having discovered it, we are now able to prevent its effects. As an example of its dangerous character, in a recent statistical account of trichinosis in Saxony, we read that in fifteen years, from 1860 to 1875, there were 39 epidemics of the affection, and 1267 cases with 19 deaths. We now have the *trichina* completely under control, and no one need run the risk of infection. By thoroughly cooking pork any parasites that may be present will be destroyed, and thus prevented from doing injury, and it may be added that by the process of cooking the pig ceases to be unclean food. The relation of such facts need and should not prejudice you against the use of pork as food, for all animals employed for the same purpose are likewise liable to be infected; but the cardinal rule should be observed that all meats, or such especially as have been recognized or are suspected to be liable to harbor troublesome or dangerous parasites, shall be cooked, by which process the parasites are rendered innocuous. Fire is the great purifier of food and water, and if it could be as readily applied to the air we breathe, we would in a great measure be able to get rid of all parasitic affections.

After the researches of Schwann and Pasteur had clearly proved that bacteria were the cause of putrefaction, Joseph Lister, the distinguished English surgeon, was led to regard the same organisms, introduced into wounds, as the cause of mortification, which so often defeats the object of the most skilful operator, and frequently destroys the patient. In this view he devised means for preventing the access or destroying these destructive organisms, and thus established that antiseptic system of surgery which is, as remarked by John Tyndale, one of the greatest and most beneficent achievements of our age.

In 1853 the silk-culture of France in value was estimated at twenty-five million dollars, but, as the result of a malady which affected the silk-worm, in two years afterwards fell

to five million dollars. Pasteur, having been requested by the Minister of Agriculture to undertake the investigation of the disease, which is called pebrine, determined it to be due to an exceedingly minute fungus parasite, a species of micrococcus. He proved that the germ might be present in the worm and in the egg and yet elude the search of the microscope. In the moth the fungus reaches a degree of development so distinct as to render its detection inevitable. From healthy moths, healthy eggs were sure to spring, and from these vigorous worms; and thus, by making the proper selection, the problem of restoring to France its former prosperity in silk husbandry was established.

In his researches on pebrine, Pasteur inquired how the disease was spread, and pursued the inquiry in the only manner that was open to him. He infected healthy worms, by smearing mulberry-leaves, their food, with material containing the fungus. He also infected them by inoculation, showing how they infected one another by scratches of their claws. Bringing together healthy and diseased worms, the healthy ones, like their smitten companions, soon sickened and died. He produced infection at a distance by wafting the fungus dust through the air. All the modes by which infectious diseases may be spread among human beings were thus illustrated. Here, I may add, we have also an illustration of the benefit that is to be derived from judicious experiments on living animals. Admitting that it was for the moment cruel to treat the healthy silk-worms in this fashion, it is clear that Pasteur's investigations swept a deadly epidemic from the soil of France, and for the units slain during the experiments millions have been preserved.

Splenic fever, or anthrax, an extremely fatal affection of cattle, was determined by the celebrated German physician, Dr. R. Koch, to be due to a bacterial parasite, the bacillus anthracis. Pasteur being led to investigate this disease has also discovered the means of preventing it. This is done by inoculating the animals liable to infection with a liquid containing the bacillus, which, by a process of treatment, has lost its virulence, and yet enables the animals inoculated to effectually resist the attacks of its more potent parent.

Hog and chicken cholera, equally destructive to the animals affected, have also been ascertained to be caused by similar bacterial parasites, and are now successfully treated in the same manner.

A micrococcus is the constant associate and cause of smallpox, and, as is well known, this dreadful disease has for a long time been in a great measure prevented by vaccination. In this treatment the same parasitic organism renders powerless the venom of its parent. Last, and not least, we now receive daily notices that that fearful malady, hydrophobia, also reputed to be caused by a bacterial parasite, has been brought under control by the great Pasteur.

Gentlemen, those of you who have chosen the responsible calling of the physician, and are now each of you, by title, doctor in medicine, we, your teachers, this day bear witness, before the trustees of the University and our fellow-citizens here assembled, that you are duly qualified to enter on the duties thereto belonging. By this calling you engage to take charge of the health of the community, to treat diseases and remedy accidents, or alleviate their pain and distress, and to save your fellows from untimely death. For this you are to expect and should receive due compensation for your services, or, in other words, you will practise your profession as a livelihood. Bear in mind, however, that it is not for this alone you are to labor, for the principles of the medical profession require you to do all in your power to promote the general health of society, even though there be no expectation of return other than that which arises in the common welfare. To the extent of your ability you should also exert yourself in the investigation of diseases with the view of preventing them. To no profession so much as ours does the altruistic sentiment apply, "Love thy neighbor as thyself;" and it is with a feeling of pride that I express the belief that no profession more than ours lives up to this precept, for no body of men are more self-sacrificing for the good of others than are physicians. Statistics show that the war against disease is attended with no trifling risks, and that those who fight this battle are exposed to chances of death above those incurred by nearly all their fellows. In the conviction that you are prepared to assume the duties and responsibilities of the medical profession, I would urge you to emulate its great spirits, its zealous workers, and its earnest searchers after truth and the common good of mankind.

It has mainly been under the advice and guidance of the medical profession that governments, societies, and benevolent citizens have established and supported hospitals and other asylums for the sick. Still further to

promote the health and common welfare, I feel that it is incumbent on us to advise and urge our government to appoint and maintain a sufficient corps of the most able physicians and skilful observers and experimenters, whose function it shall be to investigate all the causes of epidemic, contagious, and infectious diseases which affect man, domestic animals, and useful plants, with the view of determining means for their destruction or for preventing their action. Something, to be sure, has already been done in this way, and with such conspicuously beneficial results that we are encouraged to further effort to the utmost in the same direction. Until recently almost nothing was done to ascertain the causes and mode of prevention of diseases, and it was and still is customary to await their attacks, and then depend on drugs to exorcise them. Posterity, I apprehend, will look back with wonder at our apparent apathy and neglect in awaiting the invasion of epidemics and at our faith and dependence on the fetiches of medicine to destroy them.

On this theme I would like to dwell and say more, but our time is short and I must forbear.

THE RED SULPHUR SPRINGS, MONROE COUNTY, WEST VIRGINIA.

BY HENRY B. MILLARD, M.D., A.M., NEW YORK.*

I AM prompted by the perusal of an article on these springs, by Dr. L. B. Anderson, which appeared in the April number of the THERAPEUTIC GAZETTE, to add some opinions and experience of my own relative thereto. Medical hydrology is as yet, with us, in a very primitive stage, and I regard with interest all writings calculated to develop it, to elevate to its true position the "cure" by mineral waters, and to throw light upon the real character and value of our mineral springs, many of which are but imperfectly known and understood.

These springs according to the analysis of Dr. A. A. Hayes, late assayer and chemist of Massachusetts, belong to that class of waters known, according to the French classification, as sulphuretted calcic, the other forms of sulphur water being the sulphuretted sodique, the chloride and sulphuret of sodium, and the sulphuretted hydrogen. The waters of Aix-les-Bains, in Savoy, belong to the same class as the Red Sulphur Springs, and have much in

common with them. Enghien, near Paris, and Schinznach, Switzerland, may be also cited as good examples of this kind of waters. They are of special use in inveterate rheumatic affections with fibrinous ankylosis, in muscular rigidity, and in neuralgic and paralytic affections having a rheumatic origin. This class of sulphur waters is likely to be prejudicial in organic visceral affections, as cirrhosis of the kidneys or liver, or in rheumatic or neuralgic conditions characterized by the uric acid or gouty diathesis; this class of cases, when requiring sulphur water, being more likely to be helped by a chloride and sulphuret of sodium water, such as Aix-la-Chapelle, or a sulphuret sodium water, as Caunterets.

My principal object, however, in writing this article, is to call attention to the existence of a peculiar sulphur compound, combined with organic matter, retained in solution in the water, but made jelly-like by the air or acids. There are about seven grains of this substance to the gallon. According to Dr. Hays, "it seems to be an azotized base combined with sulphur, and so combined as to neutralize the distinctive characters of sulphur."

"No trace of uncombined sulphur can be found in its fresh state, and when I fermented it, hydro-sulphuric acid was the form it appeared in. I deem this a very important distinction in a medical point of view, and incline to the opinion that *all the sulphur in this compound is in a state fitted to be absorbed in the animal system*, as no other known solution of powder of sulphur is, excepting, perhaps, hydro-sulphuric acid.

"The chemical history of the sulphur compound shows that, like yeast, it has the power of inducing changes among the constituents of another body like those it is itself undergoing."

These unanalyzable organic compounds with sulphur are met with in all of the Pyrenean sulphuret of sodium waters, particularly in those of Barèges, where it is known as *barègine*, or *glairine*. According to Dr. Grimand (*loc. citat.*), ex-medical inspector at Barèges, "its quantity is almost always in proportion to the quantity of sulphurous principles. It presents the aspect of a gelatiniform organic substance, held in solution in the mineral water, and gradually becoming, on exposure to the air, of a jelly-like consistence. It forms in the basins and conducting pipes gelatinous masses, unctuous to the touch, which become rapidly putrid in the air, producing algæ of a particular nature (*sulfa-*

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raire). This *sulfaraire* is an organized, living being, a vegetable confervoid. Under the microscope it shows filaments of extreme tenuity, $\frac{1}{100}$ of a millimetre. These filaments are so many cylindrical tubes containing semi-opaque, globular corpuscles. Barégine exists in considerable amount in the waters of Barèges. It is to this that is due the peculiar unctuous feeling that patients compare to velvet; it possesses typical sedative properties, whose full therapeutic value has yet to be known."

Next to Barèges, this substance is found most abundantly in the waters of Cauterets, Eaux-bonnes, and St. Sauveur.

Now the practical part of all this is, that we have, I believe, in the Red Sulphur Springs, a water equally valuable in throat and bronchial affections with the famous waters of Cauterets and Eaux-bonnes, as well as being of equal value in many rheumatic, cutaneous, and neuralgic disorders. The waters of Cauterets, especially, have been unrivalled in the relief of follicular pharyngitis, in affections of the bronchial mucous membrane, in chronic laryngeal affections, chronic catarrhs, etc. Many thousands resort to them yearly. As I passed a month there, I had many opportunities of observing the beneficial effects of the waters. A number of my patients, some of them eminent professional singers, suffering from chronic throat and laryngeal troubles, whom I have sent to Cauterets, have been greatly relieved or cured. Many of my patients suffering from dartrous affections of the skin, or from rheumatic ailments, have been greatly benefited there.

Several years ago, on endeavoring to find at home some springs to which I could send certain patients, suffering from affections of the throat, who would not go abroad, I observed, in consulting Dr. Walton's work on the mineral waters of the United States, the similarity of the waters in question with certain of the foreign springs, and concluded they should prove equally efficacious in the same class of cases. I recommended, in the summer of 1884, a young lady to try the Red Sulphur Springs. Her trouble was laryngitis and pharyngeal and nasal catarrh, with a good deal of bronchial catarrh. One summer at the springs effected more benefit than had been accomplished by two years of treatment. Another young lady, suffering from chronic bronchitis with profuse mucous exudation, was equally benefited. These are the only two cases that have come under my personal observation. Of the efficacy of these waters in

pulmonary troubles I am unable to speak. My familiarity with the effects of the waters of Cauterets, Eaux-bonnes, Aix-les-Bains, etc., and their similarity in many respects to these, leads me to believe that we should find in them, *so far* as the waters are concerned, the same benefit in affections of the respiratory mucous membranes, in pharyngeal and nasal catarrhs, in chronic rheumatism of a certain type, and in dartrous affections of the skin. I say, "so far as the waters are concerned;" the Pyrenean springs have the advantage of a high altitude, Barèges being four thousand and Cauterets more than three thousand feet above the sea-level, and consequently combine the very important therapeutic properties of pure mountain air (the Red Sulphur Springs have an elevation of only thirteen hundred feet), and all the foreign localities I have mentioned have the very great advantages of splendid bathing-houses, arrangements for treatment by atomization and inhalation, excellent hotels, salubrious situations, and, not least, medical men of scientific ability and great experience, who give the cases of patients careful attention and consideration.

At Barèges, a small town of one hundred houses, there are every season seven thousand patients; at Cauterets and at Aix nearly three times that number. At many of our mineral springs at home where I have sent patients, the medical care has been quite indifferent and insufficient, and not to be compared with the care which patients receive at similar resorts abroad. This state of things is perhaps to be expected until our springs are better known, and until the "cure" by mineral waters receives with us the same consideration that it receives abroad. The domain of treatment by mineral waters has a legitimate existence, and I hope it will be enlarged and regarded by us as of more importance in the future.

ON THE VALUE OF THE OIL OF EUCALYPTUS IN SOME MALARIAL AFFECTIONS.*

By J. H. MUSSER, M.D., PHILADELPHIA.

FROM time to time claims of a flattering character have been made by various clinicians for the antiperiodic virtues of the oil of eucalyptus. The high standing of the

* Read before the Philadelphia County Medical Society, May 24, 1886.

authorities compels us to accept their statement unless we can disprove them by clinical research. The following notes aim to be a statement, as well defined as circumstances admit, of the experience of the writer in the use of this drug in malarial affections. They embody an account of its effects not only in true intermitting fever, but also in the modified forms of the disease which are so commonly observed in this city.

Intermitting Fever.—Care was taken to eliminate all forms of paroxysmal fever not of malarial origin. The cases selected for treatment, therefore, to make the diagnosis more certain, were of those which had had a previous history of ague, those which presented themselves for treatment during the season ripe with malaria, those which lived in pronounced malarious localities, and which presented the organic lesions of intermitting fever,—enlargement of the spleen and blood impoverishment.

Twenty-eight cases, selected in accordance with the above statement, were treated. Of the twenty-eight cases, nine were cured, ten not cured, five were relieved, but other drugs used in addition to eucalyptus, and five did not report a second time.

Tables I. and II. represent respectively the cases benefited, and the cases that were not relieved or cured. On them the type of the disease, its duration prior to treatment by eucalyptus, the length of time the case was under observation, the season the attack developed, the residence of the patient, and some remarks are detailed.

Analysis of Table I.—Number of cases, nine. Type: Quotidian, one; tertian, five; quartan, one; irregular, two. Acute attack (under six months), five; chronic intermitting, four. Length of time under observation, ten days to six months. All the attacks developed in the usual malarial season. Seven of the persons resided in a positively well-known malarial locality.

It is a misfortune that some of the cases were under observation so short a time. It is fair to presume Cases Nos. 1 and 2 (acute attack, children) were cured. They were under observation only ten days, but lived so near the hospital they would certainly have returned had a relapse occurred. Case 7 returned three months afterwards for another complaint, and Case 8 returned six months subsequently for more of the medicine that cured her before. The remaining cases were from eleven days to three months under observation. At the risk of wearying you the

abstract of Case 5 will be given. It was one of the most striking of the cases, and the gratitude exhibited by the patient was impressive to the clinical class in the dispensary. The patient was a female, æt. 30, who resided in a malarious locality. She had been confined one year previous to her visit. In the second week of her convalescence a tertian intermitting developed. It had continued ever since then unless the patient was under the profound influence of cinchona. Her spleen was enlarged. She was ordered ten drops of the oil of eucalyptus four times daily. The treatment was persisted in. She remained under observation two months without any recurrence of the malarial symptoms. It is to be regretted no note was made of the spleen some time after treatment had begun.

Reference to the table will show that three of the cases had been treated with quinine, and that relapses occurred, subsequently controlled by the oil. "Cured" must not be used in a final or absolute sense, however. From the fact that sometimes any remedy will beneficially influence an ague, especially if a purgative or some dyspeptic elixir be given conjointly, we cannot be imperious in our sanction of the value of a drug. Likewise an attack of intermitting will cease of its own accord, especially if certain extraneous conditions, as a bad state of the weather, or relief from mental strain, or what not, be removed; such an attack may recur, when unfavorable conditions arise again. It cannot be said in any of the above cases that relapses did not occur, while they are noted to have recurred in two instances.

It is proper to state that to all the cases in the table a mercurial and saline was exhibited, with the exception of Cases 1 and 2.

But little need be said of Table II., representing the series unrelieved by eucalyptus. One was quotidian, seven tertian, and two irregular in type. Six of the cases were chronic, three acute, and one unknown. Four of the chronic cases continued to live in the malarial localities; two removed therefrom. The cases were under treatment but a short time. As soon as the drug was seen not to control the fever, other remedies were resorted to. Possibly, had the drug been continued for a longer time, or the dose increased in size or frequency, a different result might have been attained.

In addition to cases of true intermitting fever, the oil of eucalyptus was administered to a class of cases, constantly brought to our notice, which present varied general symp-

toms, irregular febrile invasions, gastro-intestinal disorder, and neuralgias, but which show a decided periodicity. Care was used in the selection of these cases also, and the same conditions required as in intermitting fever, and in addition thereto the presence of the periodical element, which, however, is often misleading, was insisted upon. The cases which are arrayed in Tables III. and IV. are instances in which we would without hesitation give quinine and its congeners. It is with considerable misgiving, however, that we report them, knowing so well the doubts that can be placed about each case.

Forty-four cases in all were thus selected. Twenty-six cases did not report for treatment a second time, and hence will have to be excluded. It is fair to presume, however, that some were benefited, for after the lapse of six months or more a few returned for other affections, and said they had been benefited. Of the remaining eighteen cases, fourteen were relieved and four not relieved. The fourteen that were relieved were under observation from five days to one year. Eight of them were treated during a period less than twenty days; the remainder were under notice a long time for other disorders that developed subsequently to the malaria. A reasonable amount of doubt might be thrown around the eight cases, and therefore, after carefully selecting the cases, and including only those that had been under observation twenty days or more, six cases, or thirty-three and one-third per cent. of the entire number, were cured of their malarial affection. It is worthy of note that in the cases not benefited by eucalyptus the diagnosis was more doubtful than in any other cases.

The oil, which is quite distasteful, may be administered in capsules, in emulsion, or in glycerin. Most of my patients have taken it on a lump of sugar. Ten drops is usually administered to adults, three or four times daily. I am inclined to think small doses, three or five drops, repeated oftener, would be of more

service. In one patient an intolerable nausea was produced; in another, an attack of diarrhoea developed subsequent to the administration of the oil.

In spite of the scepticism that naturally surrounds this subject, we are forced to conclude that the oil of eucalyptus is of material value in malarial affections, and in cases where quinine is, on account of idiosyncrasy, inadmissible, the drug may be relied on in nearly one-third (thirty-three and one-seventh per cent.) of all the cases of true intermitting fever, and in fully one-third of all cases of vague malarial intermittent affections.

Conclusions.—From the above studies it will be seen,—

1. That the oil of eucalyptus is of decided value in about thirty-three and one-third per cent. of all cases of intermitting malarial fever.

2. That it has no specific value in any one type of the disease.*

3. That the longer the duration of the disease, the less liable is it to do good.

4. That relapses are not prevented by it.†

5. That its influence on the spleen has not been demonstrated.

6. That a dose of ten drops four times daily has been a sufficient dose, but that five drops every three hours would be of greater value possibly.

7. That good results are not attained as quickly as by large doses of quinine, but that a good effect should be observed within five days at least.‡

* It failed in one case of puerperal malarial fever; it was not tried in remittent or continuous malarial fevers.

† One of my private patients, who contracted intermittent fever in the South, and had very frequent relapses in the North, in spite of quinine, has not suffered a relapse since taking eucalyptus three years ago.

‡ Dr. Hunter Robb, of this city, writes me he contracted intermittent fever along the Delaware River, and has had frequent relapses, all of which have been controlled quickly and effectually by eucalyptus. He experiences the same physiological effects with eucalyptus as he does with quinine.

TABLE I.—*Cases of Intermittent Fever benefited by the Oil of Eucalyptus.*

Type.	Duration prior to treatment.	Length of time under observation.	Season attack developed.	Residence.	Remarks.
1. Quotidian.	3 weeks.	10 days.	Summer, 1883.	Malarious region.	Girl, æt. 10; treated with quinine first, with relapse; gtt. v every 3 hours.
2. Tertian.	1 week.	10 days.	Summer, 1883.	Malarious region.	Girl, æt. 12; sister of No. 1.
3. Quotidian at first, now quartan.	Several months.	16 days.	Fall, 1882.	.....	Male, æt. 23; relapses after quinine; gtt. xx t. d. caused nausea.
4. Tertian.	6 months.	15 days.	Fall, 1882.	.....	Male; gtt. xx t. d.
5. Tertian.	1 year.	2 months.	.....	Malarious region.	Female, æt. 30; followed confinement; quinine constantly prevented parox.; enlarged spleen.
6. Quotidian, then quartan, finally irregular.	4 months.	1 month.	Fall, 1883.	Malarious region.	Male, æt. 23; gtt. x t. d.; enlarged spleen.
7. Tertian.	4 years.	15 days.*	.....	Malarious region.	Female, æt. 24; gtt. x 4 times daily.
8. Tertian, then irregular.	Every fall for 3 y'rs.	5 days.†	Autumn, 1880.	Boatman; malarious region.	Male, æt. 37; gtt. x t. d.
9. Tertian.	4 years.	11 days.	Spring, 1880.	Malarious region (N. 45th St., Philadelphia).	Female, 24; gtt. x t. d.

* June 29 to August 15; reported October 30 cured.

† November 2, 1883, to November 7, 1883; returned next June for some medicine; did not report again.

TABLE II.—*Cases of Intermittent Fever not benefited by the Oil of Eucalyptus.*

Type.	Duration prior to treatment.	Length of time under observation.	Season attack developed.	Residence.	Remarks.
1. Irregular.	Several years.	42 days.	.....	.....	Eventually cured by quinine and arsenic; male, æt. 35.
2. Tertian.	3 years.	6 days.	.....	Malarious region.	Male, æt. 14; quinine after euc.; spleen enlarged; anæmic.
3. Quotidian.	.....	5 days.	Autumn, 1885.	Malarious region.	Male, æt. 35; quinine after euc.; spleen enlarged.
4. Tertian.	Several years.*	4 months.	.....	Malarious region (river).	Male, æt. 50; persistent use of euc. failed to check.
5. Irregular.	2 years.†	3 months.	.....	Malarious region; same residence as above; along low stream.	Female, æt. 48; euc. checks, but not as well as quinine.
6. Tertian.	6 years.	6 months.	.....	Acquired along Susquehanna.	Male, æt. 38; seemed to modify but not control.
7. Tertian.	10 days.	10 days.	Summer, 1883.	Malarious region.	Female, æt. 35; quinine afterwards.
8. Tertian.	6 weeks.	7 days.	Fall, 1883.	Contracted along Susquehanna.	Male; after 7 days' use of euc. resorted to quinine.
9. Tertian.	2 years.	24 days.	.....	.....	Female, æt. 24; relieved by Fowler's solu.
10. Tertian.	3 months.	7 days.	Fall, 1884.	Malarious region.	Male adult; euc. replaced by cinchona.

* Every spring and fall.

† In wet seasons.

TABLE III.—*Cases of Vague Intermittent Malarial Affections benefited by the Oil of Eucalyptus.*

Type.	Duration prior to treatment.	Length of time under observation.	Season attack developed.	Residence.	Remarks.
1. Quotidian.	.....	11 days.	August.	23d and Callow-hill Sts. (labored in swamp).	Male, æt. 38; periodical headache, with dulness and stupor; "bruised" limbs; poor appetite; dyspepsia; diarrhoea; poor sleep; night-sweats.
2. Quotidian.	4 months.	5 days; reported again in 1 year.	June.	Camden, N. J.	Chills daily; quinine; relapse every 14 days; dyspepsia; regular bowels; euc. prevented relapse and improved digestion, etc.; male, æt. 33.
3. Tertian.	Some weeks.	14 days.	June.	Jenkintown, Pa.	Tired, aching, drowsy, headache every second day; dyspepsia; constipation; euc. gtt. x 4 times daily; female, æt. 28.
4. Quotidian.	5 days.	5 days.	July.	40th and Mount Vernon Sts., West Phila.	Chilly and feverish; dull, aching headache; dyspepsia; euc. 4 times daily; male, æt. 29.
5. Quotidian.	.....	30 days.	July.	15th and Brown Sts.	Dull headache periodical, with general symptoms; relieved by arsenic; relapse; euc. gtt. x t. d.; male, æt. 21.
6. Tertian.	3 weeks.	6 days.	August.	31st and Page Sts.	Coldness, followed by fever; headache; good appetite; constipation; euc. gtt. x; male, æt. 39.
7. Quotidian.	2 weeks.	8 days.	August.	29th and Alter Sts.	Chilliness, fever, and sweat at first; no appetite; bowels regular; feverish every day; drowsy, dull, general aching; euc. gtt. x t. d.; male, æt. 13.
8. Quotidian.	6 weeks.	6 days.	August.	32d and Sansom Sts.	Periodical neuralgia, and general pains and aching; dyspepsia; euc. gtt. v t. d.; female, æt. 16.
9. Quotidian.	4 months.	5 days.	August.	Chester, Pa.	Chill, fever, and sweat at first; now cold and feverish, with debility and dyspepsia; male, æt. 63; euc. gtt. x t. d.
10. Quotidian.	5 weeks.	20 days.	August.	34th and Race Sts.	Neuralgic headache after 4 P.M.; dyspepsia; general aching; female, æt. 24; euc. gtt. x t. d., and acid. phos. dil.
11. Quotidian.	.....	28 days.	August.	Longshoreman.	Evening headaches; dyspepsia; regular bowels; general aching; male, æt. 52; euc. gtt. x t. d.; headache cured, and then added acid. phos.
12. Quotidian.	.....	.....	September.	.....	Male, æt. 38; "dumb ague."
13. Quotidian.	Several months.	29 days.	June.	20th St. and Montgomery Ave.	Chilly sensations and fever; dyspepsia and constipation; reported "a new woman;" constipation not relieved; female, æt. 45; euc. gtt. x 4 times a day.
14. Quotidian.	.....	24 days.	July.	15th and Brown Sts.	At first tertian; now chilly every day, and at 4 P.M. headache; ravenous appetite; constipation; dyspepsia; male, æt. 21; improved; relapsed in a few months; euc. repeated; did not report second time.

TABLE IV.—*Cases of Vague Intermittent Malarial Affections not benefited by the Oil of Eucalyptus.*

Type.	Duration prior to treatment.	Length of time under observation.	Season attack developed.	Residence.	Remarks.
1. Tertian.	A few weeks.	5 days.	August.	Labors along river at oil-works.	Periodical neuralgia; general pains and aching; dyspepsia; constipation; male, æt. 31; euc. gtt. x t. d.
2. Tertian.	5 weeks.	6 days.	September.	1447 Marshall St.	Chill two weeks ago; periodical headache since, with general symptoms; male, æt. 38; euc. gtt. x t. d.
3. Irregular.	4 months.	19 days.	September.	21st and Lombard Sts.	General symptoms and periodical headache; no ambition; male, æt. 34; euc. gtt. x t. d.
4. Irregular.	.....	12 days.	September.	24th and Callow-hill Sts.	Periodical headaches, dyspepsia, etc.; euc. gtt. x 4 times a day; female, æt. 35.

ON THE MEDICINAL VIRTUES OF
ICHTHYOL.

BY DR. JOSEPH SCHMIDT, BERLIN, GERMANY.

THE brief but favorable editorial remarks concerning ichthyol contained in the April issue of the THERAPEUTIC GAZETTE have been the inducement to present to the readers of this widely-circulating journal the following essay, with the view to introduce to the American practitioner a remedy which may be justly regarded as a welcome acquisition to our therapeutical treasures. The high and manifold remedial virtues inherent to ichthyol, according to the clinically established testimony of authoritative voices from the German profession, suffice to protect this new medicament from the ephemeral fate in which the majority of novel remedies deservedly perish. It is rather a singular fact that the numerous preparations of ichthyol, which have been exhibited and prized by German practitioners for the last three years, could remain practically almost unknown in America.

I now beg to submit an exposition of the most salient physical, chemical, and physiological features of ichthyol, and to add to the hitherto gathered results of its clinical trials some personal observations of its therapeutic value.

Literature.—The literature on ichthyol is necessarily scanty, as can be expected in view of the recentness of its introduction into therapeutics. Save some promiscuously scattered journalistic notes, the following treatises alone invite our interest :

1. Prof. Baumann and Dr. Schotten, in the *Monatschrift für Praktische Dermatologie*, 1883, Heft 9.
2. Dr. Unna, in the same journal, 1882, Nos. 11, 12 ; in the *Deutsche Medizinische Zeitung*, 1883, No. 17 ; in the *Sammlung Klinischer Vorträge*, Leipzig, 1885, No. 252, page 2287 ; and in the *Aerztliche Vereinsblatt für Deutschland*, 1885, No. 158.
3. Dr. Lorenz, in the *Deutsche Medizinische Wochenschrift*, 1885, No. 23, and in the *Deutsche Militärärztliche Wochenschrift*, 1885 (Mittler, Berlin).
4. Dr. Ackermann, in the *Correspondenzblätter des Allgemeinen Ärztlichen Vereins von Thüringen*, 1885, No. 8.
5. Prof. Binz, at the Fourth Congress of Internal Medicine in Wiesbaden, April 8 to 11, 1885.
6. Dr. v. Hebra, in *Die Krankhaften Veränderungen der Haut*, Vienna, 1883.

Physico-Chemical Properties.—Ichthyol, or fish-oil (ἰχθυος—ὀλεῖον), was first prepared by Schröter, a chemist of Hamburg, and represents the distillation product of a peculiar bituminous sulphurous mineral obtained from the deposits of fossil fish. According to Baumann and Schotten (*loc. cit.*), ichthyol, or the ichthyosulphate of sodium, has the following composition :

Carbon.....	55.05 per cent.
Hydrogen.....	6.06 per cent.
Sulphur.....	15.27 per cent.
Sodium.....	7.78 per cent.
Oxygen.....	15.83 per cent.
	99.99 per cent.

Its chemical formula is $C_{25}H_{36}S_2Na_2O_6$.

Ichthyosulphate of sodium is obtained by the action of concentrated sulphuric acid upon the distillation product of the mineral and subsequent neutralization with sodium. The specimen at my disposal presents a tar-like appearance and odor, an alkaline reaction, and the consistency of vaseline. The drug is perfectly soluble in water, partly so in ether or alcohol, but readily soluble again in ether and alcohol combined ; with fats and vaseline it can be incorporated in every desired proportion.

Its sulphurous constituents belong partly to the sulpho group, and are partly attached to the carbon. As the sulpho acids exercise themselves little or no action on the animal organism, the therapeutic action of ichthyol must be referred to the sulphur attached to the carbon. Through the introduction of the sulpho group into a sulphur-containing oil, the latter is rendered both soluble and resorbable. This feature distinguishes ichthyol from other organic sulphurous compounds previously proposed as therapeutic agents. "Alongside of the considerable percentage of oxygen," says Unna, "the sulphurous constituents of ichthyol represent its essential and active principle."

"The extreme solubility of ichthyol," says Prof. Ziemssen, "enhances the practical value of the remedy."

The following preparations of ichthyol, obtained from Cordes, Hermann & Co., in Hamburg, were (with the exception of the two last) examined and employed by the author :

1. Ichthyosulphate of sodium, pure or diluted.*
2. Ichthyol in an alcohol-etheral solution (five per cent.).

* A potassium and an ammonium salt are likewise prepared from ichthyol.

3. Ichthyol cotton.
4. Ichthyol plaster.
5. Ichthyol soap.
6. Ichthyol vaseline.

The somewhat unpleasant odor and taste of the preparations intended for internal administration can be satisfactorily disguised by the addition of a few drops of alcohol in which equal parts of cumarine and vanilline are dissolved.

The physiological experiments hitherto instituted with ichthyol are too deficient to claim our attention, and give no clue to the therapeutic efficacy of the drug.

Baumann and Schotten determined experimentally the absolute innocuousness of ichthyol, and found that doses of a medium size produced in dogs no palpable physiological alteration, while larger doses (3 to 5 drachms) caused copious intestinal discharges, continuing for several days. We regret the absence of exact and thorough physiological researches in reference to ichthyol, and hope that this gap will be filled in the near future. It is thus in an exclusively empirical sense that we are led to appreciate the therapeutic effects of the remedy which we are to discuss at present.

For the sake of a convenient survey, I shall at first simply indicate the various therapeutic uses without further commentary.

A. External application :

1. In lesions, wounds, and diseases of the skin (eventually with a simultaneous internal administration).
2. In tumefaction of joints.
3. In muscular rheumatism and neuralgia.
4. In catarrhal affections of pharynx and larynx (gargles and atomization).
5. In toothache.

B. Internal administration :

1. In gout and rheumatism.
2. In catarrhal gastric affections.
3. In chronic constipation.

Unna, the distinguished dermatologist of Hamburg, has the merit of having first pointed out the great healing power of ichthyol in affections of the skin and its remarkably extensive applicability in the dermatological practice (Wiesbaden Congress, April 8 to 11, 1885). It would exceed the scope of this paper to dwell on the numerous and different published cases of skin-diseases as treated successfully with ichthyol by Unna. His experience in the treatment of lepra with ichthyol has been formulated by this author as follows :*

1. The cure of lepra, even if existing for more than a year, can be effected in a comparatively short time by a systematic external and internal exhibition of reducing agents, especially of ichthyol.

2. The ichthyol salts are externally to be employed in a very concentrated form. Internally, ordinary doses (15 grains *pro die*) suffice. Being the only one of the suitable reducing remedies that may be taken internally *ad infinitum*, the ichthyol salts are of unequalled value in the lepra of internal affections (eyes, scrotum, liver, and lymphatic glands). Externally, they are indicated in weak constitutions, in presence of a very sensitive skin, in transitory or absolute contraindications of stronger applications (chrysarobine, pyrogallol, and in the lesions of the integument produced by the latter).

3. Ichthyol is not only an external (though mild) antileprosum, but acts also by its peculiar alterative virtues when ingested by a leprous individual.

4. The prognosis of lepra must be regarded as more favorable than that of the syphilitic lesions, as far as relapses are concerned, for the remedy of lepra need not be suspended, like mercury and iodine, on account of eventual after-effects.

Küssner,† of Halle, regards as indications of ichthyol eczematata of every description (pruritus universalis, prurigo, and chronic and acute articular rheumatism). Prof. Binz, of Bonn, eulogized the preparations of ichthyol likewise at the Wiesbaden Congress. Unna (*Aerztl. Vereinsbl. f. Deutschland*, 1885, No. 158) emphasizes the healing power of ichthyol in the various forms of acne, complicated with rosacea, and in rosacea alone. We quote here the words of the dermatological authority : "If the substitution of sulphur by the preparations of ichthyol must be considered a progress already in acne, as ichthyol, unlike sulphur, never attacks the eyes, this substitution is still of greater importance in rosacea. The cure of this affection, previously laborious and doubtful, has been rendered rather easy and prompt by ichthyol. I give ichthyol internally in this affection, as follows :

R Ammon. sulphoichthyolici, fʒi-ii ;

Aq. dest., fʒv. M.

S.—15-30-50 drops (gradually increased) in water morning and evening.

In another place of the quoted paper Unna says, "The internal use of ichthyol regulates the circulatory disturbances of organs, and is

* Monatsh. f. Prakt. Dermatol. Ergänzungsheft, 1885.

† Wiesbaden Congress.

indicated in hyperæmia and swelling of the nasal and pharyngeal mucous membrane, hyperæmia and chronic inflammation of the conjunctiva, frost-bites on hands and feet, sensation of cold in the extremities, hemorrhoids, menstrual anomalies, and pains in loins and back caused by sanguineous stagnation in the pelvic organs. Ichthyol raises the working power of the digestive organs, regulates (without increasing) the movements of the bowels, and heals old gastro-intestinal catarrhs. Digitalis, when given for cardiac affections, is no contraindication for ichthyol."

(To be concluded in next issue.)

ALUMINIUM BRONZE IN MEDICINE AND DENTISTRY.

BY PROF. C. SAUER, BERLIN, GERMANY.*

ALUMINIUM BRONZE, which I have utilized for the under layer of teeth-plates, is entirely free from injurious oxidation. For this purpose, and in teeth-straightening machines, it admits of easier manipulation than gold alloys or silver. I believe, therefore, that it might be of use in the manufacture of surgical instruments. Canulas, sounds, catheters, etc., might be made, and everything that is manufactured from silver. It is an alloy of 900 copper and 100 aluminium. It admits of almost as ready stamping and pressing as pure silver (which, next to pure gold, is the softest metal), and it has besides the elasticity of steel. In form of wire, aluminium bronze possesses a power of resisting tension approaching that of steel wire. These characteristics render the aluminium bronze capable of substitution in many cases for silver, and for silver and gold alloys. I have found the melting-point of the aluminium bronze to be higher than that of pure gold,—1000° C. It may, accordingly, be made red-hot without danger of melting, and manipulated with hard solder. I solder it with from 14- to 16-carat red gold, and such solder is more capable of resisting chemical influences than the silver solder, which contains zinc. 10 grms. of aluminium bronze, in the form of a lead plate, are worth 25 pfennige (6 cents), while 10 grms. of 12-carat silver, in the form of a lead plate, are worth 1 mark 50 pfennige (37 cents); 10 grms. 14-carat gold cost 19 marks (\$4.75). Aluminium

bronze is one-half lighter than 12-carat silver, and almost half the weight of 14-carat gold.

For testing how aluminium bronze is preserved in the mouth, I have employed the galvanic current. Pure aluminium, with other metals, in the presence of an acid or an alkali, yields a galvanic current. Years ago, in experiments with the mouth, I found that in a combination of aluminium with zinc the latter oxidizes. In manufacturing a combination of aluminium with gold alloy or platinum, under such circumstances, the aluminium, on the contrary, decomposes. In two cases in which it was possible for me to weigh pieces of aluminium bronze placed in the mouth, under the influence of a possible galvanic current, and the pieces not being cleaned, and therefore not mechanically worn, after the lapse of four weeks I noticed no loss of weight. For instance, with a piece weighing 16 grms. I have been able to discover only a loss of 0.008, and, besides, after first weighing the piece,† a screw was afterwards inserted, so a very slight mechanical loss of weight, therefore, took place. The aluminium bronze oxidizes only superficially in the mouth. There forms upon it a kind of patina, such as is formed in the wearing of plates of 14-, 16-, 18-, and even 20-carat gold. It admits of manufacture into spiral springs, plates, screws, canulas, etc., for surgical purposes. Even knives have been manufactured therefrom. A solution of corrosive sublimate of 1 to 1000 affects it superficially. For its disinfection carbolic acid is to be preferred, as it does not attack the aluminium bronze. Gold aluminium bronze acts similarly, but oxidizes to a greater extent, is softer, and not so elastic, and therefore is to be used as green gold or 20-carat gold is used.

LEGAL TENURE OF CEMETERY PROPERTY.

BY HENRY A. RILEY, ESQ., NEW YORK.

THE tenure of cemetery property is an important matter, as it concerns every one to know in whom exists the ownership of land in which is buried the remains of departed ones.

The question has assumed a new aspect in recent years, owing to the formation of the large public cemeteries. Prior to fifty years

* Instructor of Dentistry at the Institute of Dentistry of the Royal University at Berlin.

† A bandage for fracture of the upper jaw, which was shown at the Surgical Congress in the mouth of the patient.

ago interments were almost universally made in grounds surrounding churches or in land belonging to some political community, such as a town or village. The ownership in England of the church building and the burying-ground surrounding it has been held to be in the rector of the parish, and he has exercised at times the most arbitrary exclusion of the bodies of persons whose friends wished to have buried in the ground made sacred by the use of centuries. While the ownership of the land has been held to be in the rector, the courts have also held that every member of the Church of England has the right of burial within the parish church-yard, and cannot be deprived of it. The cases of exclusion noticed have mainly been those of persons connected with Dissenting Churches, but who paid taxes for the support of the Established Church, and who desired interment beside the remains of members of their families who had been in communion with the Established Church. In this country the colonies had at the outset what often was practically an Established Church, yet the right of burial does not seem to have been refused to any one in the burial-grounds which were created and owned by the town or village, and yet the individual did not in many cases acquire personal ownership of a lot. There grew up as the country became older desires for a more certain tenure of cemetery property, and consequently cemeteries other than the common grounds of the town were sought. The churches set aside land surrounding them for the burial of their members and their families, private grounds belonging to a few families were formed, or a special piece of ground was consecrated on some hill-top or in some valley for the separate use of a single family. Last of all came the formation of large public cemeteries, organized under State laws or by legislative charter, which had no connection with any ecclesiastical organization, but were intended for the general public.

In addition to these public cemeteries, which have become so prominent in connection with burial, there are near many of the large cities cemeteries belonging to special denominations but open to the interment of any person belonging to those churches. Such are Calvary Cemetery, under the control of the Roman Catholic Church, and the Lutheran Cemetery, belonging to the church of that name, both of which are near the city of New York.

The principles of tenure in these various forms of cemetery property differ somewhat,

and many of the States have special statutes, which will be referred to in another article. In burial-grounds surrounding churches, which, in times gone by, was the general place of sepulture, the title was in the church organization as much as that of the church building itself. In many cases land was given to churches for the purpose of creating or enlarging burial-places. The church, which usually was not a corporation, but a voluntary association of persons holding similar ecclesiastical opinions, held the title as other voluntary associations are allowed to do under the laws of the various States, the fee being in the whole number of members. It is probable now that almost every State has laws permitting the formation of religious corporations, and such bodies would hold the title to burial-grounds, succeeding in the cases of long established churches to the title held originally by them as voluntary associations. In these burial-grounds lots were generally set aside for families, and often by written instruments, giving certain rights. Money was frequently received for such lots, and receipts given. Documents, in the nature of deeds, were passed in many cases, yet these often wanted some of the requirements of ordinary deeds, or were full of conditions, so that title in the common sense could not be again transferred. These documents were not usually recorded, and at the present time it is rare to place on record any transfer of cemetery property, such as individual lots, whether in church grounds or the large public cemeteries, such as Laurel Hill, Greenwood, or Mount Auburn.

This being, then, the usual custom about transferring rights from church organizations to individuals, it has become a very interesting question to know exactly how much of ownership was transferred to the individual by the payment of money and the setting aside of certain fixed spaces of ground. In general, it may be said that only the right of burial was transferred. The individual did not acquire and could not exercise the ordinary rights of ownership. He could not dispose of the lot for purposes other than burial, and this was true whether the document transferring to him a qualified ownership mentioned the restriction or not. The individual could, however, exercise some powers over the cemetery at large. The bodies of the dead could not be touched by any one for purposes of removal without the consent of the owner of the lot or the order of a court, and cemetery authorities them-

selves were in the same position as to removal of bodies. In this latter case, however, the statutes of the several States often prescribed a way for the legal removal of all of the bodies buried in a cemetery to a new location.

The law generally held that the individual owner had an easement in the land but not an unqualified ownership. This was equivalent to a right of continued and uninterrupted possession and occupation.

The right was similar to that by which a pew in a church was held when it was sold to an individual. In such cases the owner had no power to dispose of the few feet of ground on which his pew was resting in any way contrary to the regular purposes of church worship.

Even when it has been conceded that the individual did not have an unqualified fee in a burial lot, it has been sometimes claimed that the dedication by a church, or any other organization, of land for burial was so public and sacred that the land could never be used for any other purpose than burial, and that consequently the individual occupation, if not ownership, would be perpetual. But it is doubtful if there was ever any real basis for this claim in the common law. It has been held that the courts, even without special statutes, could, for good reason shown, direct the removal of bodies, and this in the face of passionate opposition on the part of lot-owners and relatives of the deceased. Such questions rarely arise now, as the States generally have specified a way by which the propriety of removal can be lawfully decided.

In the case of private cemeteries, for a small locality or community, the same general principles of ownership are to be applied.

In the case of burial-grounds containing only the bodies of a single family, ownership, it would seem, was in common, and descended to the heirs. The States have in many cases declared that grounds of this character could not be laid out within specified distances of neighboring houses.

In the case of the large public cemetery corporations the title is usually in the corporations and not in the individual lot-owners. Such cases are usually governed by the carefully-drawn regulations of the organizations themselves. Some do not grant a fee but only an easement, and some grant a fee but subject to restrictions. Reference will be made in another article to some of the principal cemeteries and their regulations.

In regard to restraints upon alienation, where the individual owners have some sort of a title,

it may be said that the courts will not permit the sale by one of several owners to strangers, and injunctions will be granted forbidding such transfers. This seems to be true under the common law, and in many States laws directly forbid any transfer whatever after bodies have been once interred in a lot, the title passing in such cases only to heirs by descent. It has been held that without a law on the subject it was not contrary to public policy to mortgage an individual lot. In New York, however, and other States all mortgages are now forbidden. Lots are exempt from sale under execution on debt.

VICARIOUS GENEROSITY.

A very good story as to a mode of repelling unwarranted claims on medical charity, which in some cases at least may prove successful and worthy of being repeated, is related in the *Brit. Med. Journ.*, March 20, 1886.

"A lady of quality," a peeress to wit, sent her butler to a well-known physician, a man who, were we at liberty to mention his name, would be generally recognized as one of the busiest men in London, with the request that the patient might be examined and prescribed for, gratuitously, of course. "My good-man," said the physician, "as you are my lady's butler, you are not a suitable person to be treated at the hospital where I see poor patients for nothing; in my own consulting-room, my time is too valuable; here is a guinea, go and see my junior colleague, Dr. —; he is not so busy as I am, and will be able to advise you for that fee." Her ladyship, it is interesting and instructive to learn, repaid the guinea next morning. The moral is plain. The profession as a whole does so much charitable work, that many people seem to expect that every member is to give his time and labor at any time and any place, and to any extent which may be most convenient to the patient or his friends. Quite a large enough proportion of the people who go to hospitals have no right to gratuitous advice, and it is asking rather too much of even the most patient and long-suffering to expect that a still more well-to-do class, too fastidious to go to hospitals, should be allowed to invade private consulting-rooms during the morning hours, which are dedicated to remunerative labor. No other profession has such claims made on it. If the butler had been in some legal difficulty, would the family lawyer have been expected to advise him gratis?

The Therapeutic Gazette

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Leading Articles.

RECENT PROGRESS IN SANITARY SCIENCE.

THE constantly-increasing demand in every community, that physicians should be not only, as in former ages of the world, healers of disease, but also preventers of derangements to health, in accordance with the laws of both public and personal hygiene, is manifested in numerous ways, and especially indicated by the reports of State boards of health, which accumulate with great rapidity upon our editorial table. Thanks to the deplorable outbreak of typhoid fever at Plymouth, Pa., our own State has at last joined the number of those in which systematic care for the health of citizens is imposed as a duty upon a governmental department, and at the present time Ohio is the only prominent member of the American Union in which an organized struggle against the causes of preventable disease and premature death, by an established State board of health, is neglected.

Among the highly important and as yet unsettled problems now demanding solution at the hands of sanitarians, is that of sewerage systems and sewage disposal, to the dis-

cussion of which a large part of the non-statistical section of the last Rhode Island report is devoted. The author of this able essay considers the questions involved especially as applicable to the needs of the city of Providence, and after an extended investigation of the methods of sewage disposal in England and on the continent of Europe, Mr. Grey, as city engineer, recommends the conduction of the sewage to a point below the city, when after treatment with chemical substances, which will precipitate the suspended matters, the clarified effluent is to be emptied into deep water, with which it will be carried out to sea. Mr. Grey recommends this process because he believes that the resulting purified liquid will be entirely harmless, and that, therefore, although this plan is less effectual than the mode by sewage irrigation as practised in Paris, yet it will be preferable in this instance on account of its smaller cost. The amount of town sewage from Providence is estimated at about three millions of gallons daily, and the expense of the additional sewers, tanks, and other apparatus, is calculated at nearly four millions of dollars. The sludge or precipitated material is to be compressed into a mass firm enough to admit of easily handling, and is believed to be valuable as a fertilizer, although no immediate income to the municipality from its sale as a manure is expected. At the present time it appears that all the precipitation methods are carried on at a loss to the town authorities employing them. The plans are very numerous, but those which have best stood the test of time are three in number, namely: 1st, the Coventry process, in which the sludge results from the addition of crude sulphate of alumina, salts of iron, and lime; 2d, the native guano, or A B C process, in which alum, blood, clay, with animal charcoal, are the precipitants; and, 3d, the lime method, in which milk of lime is employed. Of these the A B C device, the merits of which were very highly vaunted at first, has been generally abandoned, except in the town of Aylesbury, England. At Leeds, England, the lime process has been substituted for the A B C method, in which, although the resulting effluent is more thoroughly purified, less economy is secured than by that in which milk of lime is employed.

The establishment of works at Providence, in accordance with the carefully-considered suggestions of Mr. Grey and his assistant, Charles H. Swan, will doubtless be watched with great interest by American sanitarians, and the results which may be attained, like

those afforded by the experiment now going on in Memphis, upon the separate system of drainage, will be of great value to sanitary engineers generally, whether they lead to failure or success.

For several years past the efficiency of the Massachusetts Board of Health has been so unwisely crippled, in consequence of political influences, which decreed its union with the departments of lunacy and charity, that little good work has been accomplished, and the annual documents put forth under the name of reports have presented a lamentable contrast year after year to the earlier volumes, which formed a series of which even our modern Athens might be proud. The supplement to the report of this heterogeneous board for 1884, containing the papers on public health, displays, however, a creditable renewal of activity in the pursuit of sanitary science, which may perhaps be attributed to the encouraging prospect of a restoration to the hygienists of Massachusetts of independent organization.

Among the valuable essays presented in this volume is that of Prof. Edward S. Wood, M.D., on "Arsenic as a Domestic Poison," in which he endeavors to popularize a knowledge of the fact that many of the red, yellow, and brown wall-papers in common use are almost as dangerous as the bright green decorations which have been so frequently condemned by hygienists as to largely prevent their employment. This admirable article of Dr. Wood's is illustrated in the most practical manner possible by a series of thirty-six strips of wall-papers, calico and Turkey-red fabric, which, with a single exception, contain arsenic in quantities varying from about half a grain up to nearly fifty-six grains per square yard. None of the heavily arsenicated papers, such as were described in a report by Dr. Draper some years since (in one of which two hundred and sixty-three grains of arsenic per square yard were found), have been included in this instructive collection of poisonous wall decorations. The reason for their omission is given in the powerfully-suggestive circumstance that on the previous occasion, when such samples were used in illustration, their handling and folding by the bookbinders employed were found to give rise to extremely disagreeable effects,—that is to say, the usual symptoms of arsenical poisoning. It is worthy of note that the single specimen of wall-paper in Prof. Wood's series in which no arsenic could be detected was of a bright green color, showing that no necessity for the use of

Scheele's green and other arsenical pigments in the printing of wall-papers really exists.

Dr. Wood very properly directs attention to the fact that those among his samples called by dealers "glazed and plated papers" are the most dangerous, because they are so largely used by young children of kindergarten schools in the manufacture of the attractive but perilous little mats, covers, etc., in which the infant constructors take so much delight. Even when teachers of such embryonal educational establishments instruct the pupils not to place the brilliant strips of paper in their mouths, or even between the lips, there is no doubt that tiny particles of the deleterious pigment are frequently rubbed off upon the hands, and being conveyed to the mouth, and passing from thence to the stomach, give rise in numerous instances to otherwise unaccountable derangement of health. One of the green papers described, and actually used in kindergartens, was loaded with twice the fatal dose of arsenic for an adult upon every square foot. The green paper used in covering a small bandbox, having three square feet of surface, which was examined by Dr. Wood, contained about one hundred grains of arsenic, and the same deleterious metal was found in alarming quantity in the papers employed in manufacturing theatre-, concert-, and car-tickets, playing-cards, and many other objects handled freely, and frequently without the smallest hesitation, in the daily occupations or the pleasures of civilized life.

Prominent among the Western State boards of health stands that of Illinois, holding the proud position of an eminent benefactor to the whole American people, through its efforts to elevate the standard of medical education and cut short the careers of medical quacks and charlatans upon our Continent. The practical efficiency of the stringent regulations adopted by the Illinois Health Board is proved by the fact, that whilst in 1880 there were but fourteen medical schools in the United States which required evidence of suitable preliminary education, and seventeen which gave some prominence to the study of hygiene, there were in 1885 one hundred and ten colleges insisting on the preliminary education requirement, and ninety-one in which preventive medicine was duly taught. Although, as Dr. Rauch, the energetic secretary of the Illinois Board of Health, remarks, some of this improvement is apparent only, the announcements being in a few instances intended chiefly as a means of securing wider

and more favorable advertisement of their institutions, yet deducting whatever allowance the most sceptical may demand on this account, there still remains a substantial gain for the present, and a still more brilliant promise for the future of medical education in America.

The peculiar excellence with which we believe every impartial reader, as he rises from a perusal of the last Michigan health report, must credit Dr. Henry B. Baker, its indefatigable author and secretary of the board, is the thoroughness with which accurate information on sanitary subjects is disseminated among the people of Michigan, fortunate enough to enjoy the official care of this active organization. Not only is an earnest effort made to faithfully discharge the duty of warning American citizens against the ordinary causes of disease, such as typhoid fever, diphtheria, and scarlatina; by the free distribution of brief essays or leaflets concerning such maladies, but translations of these excellent rules for their prophylaxis are issued in German, Dutch, French, Polish, Swedish, and Danish-Norwegian, in order to facilitate the operations of preventive medicine among the ignorant foreigners who find a refuge (too often, alas, only to abuse it) upon our shores. Some of these little pamphlets (as, for example, that on the prevention of typhoid fever, also reprinted in this report) are so clear, concise, and comprehensible, as to render them models of effectiveness. Indeed, so admirably are these sanitary tracts adapted to the end in view, that we deem them well worthy to form the basis of popular instruction, which, if given for a single day in the year in every public school throughout the United States, would, we believe, deliver the people of America from tens of thousands of premature deaths, and perhaps millions of cases of unnecessary illness annually. Dr. Baker estimates the total number of deaths from typhoid fever in Michigan at one thousand per year, and considers the proportion which deaths from typhoid fever bear to the total mortality throughout our Union is elsewhere at least equally great. The reply to the question as to how this enormous death-rate can be prevented he considers may be given in the four words, "Stop drinking contaminated water," and we wish that every physician, yes, every householder in America, who is inclined to be ignorant or careless upon this important subject, would spend his next leisure half-hour in reading over the convincing array of indubitable facts and cogent arguments mar-

shalled by Dr. Baker in favor of this great aphorism of practical hygiene.

A report of especial interest to the medical profession in Pennsylvania, and in several other States where boards of health have recently been created, or are soon to be established, is the first annual volume from the State of Maine. Among the valuable contents of this highly creditable document, the portion of greatest general interest is doubtless an account of the well-devised system of prophylaxis, so successfully erected against the introduction of smallpox from the neighboring Canadian provinces. The outbreak of variola in Canada having been allowed by ignorant and careless municipal authorities to assume such alarming proportions (a total of 3164 deaths being recorded), much anxiety was soon experienced in the neighboring States of Maine, New Hampshire, Vermont, and New York lest this loathsome disease should be conveyed across our frontier by persons endeavoring to escape from the epidemic. As an aid against the chance of invasion, a circular was addressed to the numerous proprietors or managers of lumber camps in the northern and eastern parts of Maine, urging them to compel every foreign workman to submit to thorough vaccination before giving him employment, and pointing out the methods of isolation and disinfection necessary should cases of smallpox appear. Thorough inspection and vaccination services were promptly instituted upon the railroads crossing the boundary-line, and so successful were the officials of the State board in their well-planned system of defence, that only three cases of smallpox or varioloid are reported to have occurred in Maine during 1885. Moreover, it is gratifying to relate that, although two of these attacks were sufficiently severe to prove fatal, the sanitary precautions of isolation, disinfection, vaccination, and re-vaccination were so stringently enforced, that no secondary cases developed from these otherwise dangerous *foci* of infection.

THE ACTION OF KAWA RESIN.

KAWA, the resin obtained by Lewin from the root of piper methysticum, whose action we have already referred to in the THERAPEUTIC GAZETTE for February and April, is still attracting considerable attention, and promises to become almost as valuable, provided it can be readily handled, as cocaine now is.

Dr. N. A. Randolph, in the *Medical News*, February 13, 1886, obtained results which, in the main, confirm those of Lewin, although the effects in his hands were not quite as marked as reported by Lewin. Dr. Randolph suggests the name lewinin for this resin, instead of the term alpha kawa resin, proposed by Lewin, who discovered it. The resin is a semi-fluid body, with a peculiar aromatic taste, pungent and hot like pepper; when placed upon the tongue, there is a momentary burning sensation, with increased salivary secretion, followed by local numbness, which may last for more than an hour. The kawa resin is too irritating to be applied to the human conjunctiva, but Dr. Randolph thinks that by first instilling cocaine, so as to render the conjunctiva insensitve, kawa might then be used to produce more prolonged anæsthesia. Its use in dental practice also suggests itself, and in the hands of aurists and laryngologists, though the facts that it is insoluble in water and glycerin, and that an alcoholic solution has serious disadvantages, will perhaps somewhat restrict its usefulness. It may, of course, be used in suspension in mucilage, but no reports have yet been published as to the use of the drug so prepared. The kawa resin can also, as we have already mentioned, be used as a means of disguising the taste of bitter medicine by rendering the tongue first insensitve by its application.

Still another use for the resin of kawa, or, as it is also spelt, kava, is in the treatment of gonorrhœa and acute affections of the urinary passages. As pointed out by Dr. Sanné, as long ago as 1876 Dr. Dupouy described the benefits obtained in the treatment of gonorrhœa by the decoction of kawa used as a stimulant in the Samoan Islands. The pain on micturition becomes less, the discharge decreases, and cure in many cases resulted in from ten to twenty days. Dr. Sanné has also himself had personal experience with the use of kawa in various diseases of the urinary apparatus, and he reports in the *Bull. Générale de Thérapeutique*, March 15, 1886, a number of cases in detail where this mode of treatment was employed. Dr. Sanné used kawa in the form of an alcoholic extract of the root, which probably closely corresponds to the resin described by Lewin. Sanné, however, calls it kavaine, which, while not an alkaloid, he thinks may perhaps be a glucoside. It is obtained from the bark of the root. He has made use of this alcoholic extract in pill form, each pill containing $1\frac{1}{2}$ grains, which correspond to about 15 grains of the powder of

kawa. Eight to twelve of these may be given daily. They are well tolerated by the stomach, do not produce diarrhœa, eructations, or disturbance of appetite, have no effect on the skin, and produce no odor on the breath. They impart to the urine a slight odor, which is comparable to that of copaiba. He reports six cases in detail, in all of which cure resulted, one of spasmodic cystitis, one of inflammation of the prostate with double orchitis, three of acute gonorrhœa, and one of chronic gonorrhœa with suppurative orchitis. In the treatment of gonorrhœa the use of the kawa pills appears to have been the only medication employed.

PERMANGANATE OF POTASSIUM AS AN EMMENAGOGUE.

THE tendency to report our successes and to allow our failures to drop out of sight is inherent in human nature. Even when our failures are through no fault of our own, and might be instructive to others, we are very loath to believe them worthy of record; hence it is that in regard to almost any remedy medical literature abounds in laudations and successes, whilst reports of failure are rare, so that the balance of published accounts is almost always in favor of a drug or a measure, even though such measure may have been proven worthless and universally discarded.

These considerations have been brought to our minds by a recent perusal of the literature of metallo-therapy, a system of treatment which, if all that has been said of it were true, would be of great importance. Our readers may remember that as long ago as 1849 a French physician by the name of Burq discovered the alleged facts which are the basis of the system, and that being of a most persistent turn of mind, he pursued the subject in season and out of season until, in 1876, he persuaded the French Society of Biology to appoint a commission to investigate the truth of his assertions. This commission was composed of the most eminent of French neurologists, and, after three years, reported the correctness of the statements of Dr. Burq. The disease especially implicated in the method was hysteria, and the condition of hysteria in which there is lack of sensation, viz., hemianæsthesia. It was found that the hysterical patient varied in her relations with different metals; that in the one case the binding upon the anæsthetic surface of a disk of zinc would restore sensibility, or, in another case, copper

alone was successful, whilst a third case yielded perhaps only to the persuasive powers of silver, gold, platinum, or other precious metals. The commission further discovered that usually there was a transfer of the anæsthesia from one side to the other, so that whilst the left side, for instance, became sensitive under the application of the proper metal, the right would lose its sensibility. The capital therapeutic discovery of Burq was that if the metal which was found to be so related to the individual as when in contact with the skin to remove anæsthesia, was given in continuous dose internally, it produced a cure. This also was in a measure confirmed by the commission. In sundry cases, under the use of the elected metal, color returned to the face, power to the paralyzed arm, sensitiveness to the benumbed surface, joy to the distressed heart, and peace to the surrounding family. A lamentable "find" made by Prof. Charcot was, however, that the application of a metal to the healed surface was followed by a return of the symptoms, so that the clouds which had been dispersed would again make the landscape of the patient's future dull and leaden. Permanent satisfaction could only be obtained by fleeing from metals as from the unpardonable sin.

Great names are those which have vouchsafed the facts of metallo-therapy. Slight, indeed, has been the public denial, and yet who to-day uses metallo-therapy as a practical method of treatment?

In recent numbers of the *THERAPEUTIC GAZETTE* we have published, under the ægis of names scarcely less renowned than those which sanction metallo-therapy, the use of permanganate of potassium in amenorrhœa. As is known by everybody, the permanganate of potassium is decomposed with great certainty and rapidity by organic matter in the presence of an acid.

It seems to us very evident that the permanganate of potassium cannot exist for a few moments in the stomach without decomposition, and that as the permanganate it cannot ever get into the blood; if, therefore, it really has emmenagogue properties, such properties must be possessed by the salt of manganese which is formed in the decomposition of the permanganate of potassium. We would very much like to direct our readers to a clinical study of this subject.

In the first place, we wish extended the practical investigation as to whether the alleged results produced upon the uterus have not been merely accidental.

In the second place, if the permanganate be really found to be an emmenagogue, trials should be made with the acetate or other soluble salt of manganese.

We have very little doubt but that various practitioners have tried the permanganate, and almost as little doubt that it has been found wanting as an emmenagogue; but, from the considerations already given, the reports of failures are wanting. We would, therefore, ask any reader who has tried either *unsuccessfully* or *successfully* the salt, to let us know the general scope and the details of his experience.

If emmenagogue properties are possessed by the permanganate and also by the salt of manganese, the latter would be much the preferable, because less apt to irritate the stomach.

THE NEURALGIC DIATHESIS.

ONE of the so-called opprobria of the medical profession most frequently spoken of is neuralgia, and it may not be amiss to pause to think what we mean by this much-used word. Formerly almost all forms of nerve pains were spoken of as neuralgic, so that, whenever there was a lack of local lesions, such as abscess, boils, swelling, etc., the patient was said to be suffering from neuralgia. At present, by the acute diagnostician, very many of the cases which are still believed to be by the public suffering from neuralgia are recognized as sufferers from systemic or organic diseases. There are still, however, nerve pains for which we cannot account, and for which the name of neuralgic must be retained. In many of the most obstinate of these cases autopsies will show that the supposed neuralgic pain has arisen from a clearly defined incurable lesion; thus a clot forming near the trigeminal nerve-centre, or a spicula of bone hidden from view, and pressing upon a nerve in such a way as to irritate it without provoking a definite neuritis, would give rise to pain that during life should have to be simply termed neuralgia, and would resist all therapeutic treatment. Leaving out of sight these causes of hidden lesions, there remains a group of cases in which neither during life nor after death are we able to detect the cause of the pain. It would seem either that there is a molecular change in some of the sensory nerves or their centres so delicate as to escape our instruments, or else that there is a general condition of the nervous system which predisposes it to pain-storms. The essence of the

neuralgic diathesis may be considered to be a peculiar, excessive sensibility of the nervous system, which causes it to respond by pain to irritations so slight as not to be perceived, or scarcely to be perceived, by the normal nervous system. Thus most persons experience some uneasiness when a storm is gathering. Even the nervous system of cattle may be so perturbed as to give them warning of the approaching tempest. Hence the Texan steers gallop madly from the coming "norther" whilst the sky is still clear. At such a time the sufferer from the neuralgic diathesis responds to the atmospheric changes by a furious paroxysm of pain.

A very large proportion of cases diagnosed as neuralgia are undoubtedly cases of chronic gout. If the practitioner recognizes the true nature of these cases by regulating the habits, diet, and drugs of his patient, he can bring much of relief. There are, however, cases in which no evidences of inherited or acquired gout can be obtained, and we must acknowledge that there is a more or less incurable bodily habitual condition, which may be known as the neuralgic diathesis or temperament. This diathesis is often inherited, but is sometimes developed by prolonged bodily exhaustion and anæmia. When once acquired, this diathesis may persist, although the original cause has been removed. If the nervous system has been sufficiently long impressed, the pain tendency becomes stamped upon it precisely as the epileptic tendency becomes a part of the nervous system in a case of neglected reflex epilepsy, and remains after the removal of the original irritation. These neuralgic pains are to be recognized by their persistency, by the apparent absence of cause, by their occurring sometimes in one part of the body and sometimes in the other, and by the diagnostic exclusion of all other sources of pain. The acquired or inherited neuralgic temperament frequently is closely connected with or complicates pains of definite type; thus, cases of migraine occur in which, besides the typical paroxysms, there are occasionally seizures in various parts of the body, or, it may be, attacks of head pain, presenting none of the typical characteristics of migraine. Under these circumstances we may consider that there is a neuralgic temperament superadded to the inherited migraine. The neuralgic diathesis is undoubtedly closely allied to inherited gout, but the facts—that it so often corresponds with the general neurotic temperament; that it is so much more frequent in women than in men; that it so often prevails

in dry climates, whose tendency is to produce neuroses rather than gout; and, finally, that it so often occurs in persons free from other gouty symptoms—indicate that it is something more than gout. Even in recent books we read of cases of neuralgia with trophic changes, such as ulcerations, eruptions, etc. It is scarcely necessary to point out that in all these cases the supposed neuralgia is really due to some organic disease, which, in a large proportion of cases, is a neuritis.

THE SALICYLIC TREATMENT OF GLYCOSURIA.

FROM his recent valuable researches, Professor Latham concludes that there are two distinct kinds of diabetes. First, there is that which arises from a neurotic disturbance of the function of the liver; this has the effect of arresting the metabolism of the glucose, and allowing it to pass unchanged into the general circulation and appear in the urine. Second, that which arises from a neurotic disturbance of the function of muscle; this allows glucose to form in that tissue, and to pass unchanged into the general circulation and appear in the urine. He has also shown that this second kind of diabetes is intimately connected with rheumatism; so intimately, that a degree of more or less oxidation determines whether the muscular tissue generates an abnormal amount of lactic acid or of glucose in the system. Moreover, he has shown that, when salicylic acid is administered, it has the property of arresting the formation of both lactic acid and glucose, by means of a chemical combination which it forms with the antecedents of these products.

These views are, to some extent, confirmed by an article published in the THERAPEUTIC GAZETTE of last year, page 446, by Dr. Thomas J. Yarrow, in which are outlined four cases of the complete disappearance of sugar from the urine under the continuous administration of salicylate of sodium. In the *Brit. Med. Journ.*, May 1, 1886, Dr. Holden in a very valuable article calls attention to the rheumatic glycosuria, and reports six cases of rheumatic glycosuric patients in all of which the administration of salicylic acid produced a great reduction in the quantity of urine and entirely removed the sugar. In several of these cases there was no restriction in diet ordered. Dr. Holden has also used salicylic acid in four other cases in which no rheumatic symptoms existed, and in all failed to make

any impression on the polyuria or sugar. The first and most marked effect of the salicylic treatment, according to Dr. Holden, in the glycosuria of rheumatic persons, is the almost complete removal of the distressing polyuria which accompanies it.

In one case, after four days' treatment, the daily evacuation of urine was reduced from twelve to four pints, and, in all the cases, this effect was one of the earliest and most constant; at the same time there was a considerable fall, both in the specific gravity of the urine and its proportion of sugar; even when the treatment fails to remove the sugar entirely, it reduces it to such a trifling amount, that the patient is unconscious of any ailment, and gains in flesh and strength. This improvement persists for weeks after suspending the medicine; the quantity of urine never exceeds three to four pints in the day, nor does the specific gravity rise above 1028 or 1030, though containing sugar. Even this condition must be safer and less serious than when the patient is passing daily nine to twelve pints of saccharine urine, of a specific gravity of 1040 and upwards.

As to diet, the careful restriction which is so imperative in the diabetes of hepatic origin is not so necessary in this kind; still, Dr. Holden thinks it greatly helps to restrict the formation of glucose in the system, by prohibiting potatoes, farinaceous puddings, and sugar as much as possible.

In administering salicylic acid, the following mixture has given good results: *R.* Salicylic acid, ʒii ; bicarbonate of sodium, ʒi ; carbonate of ammonium, ʒi ; mix in water, ʒi ; and, when effervescence has subsided, add water to ʒxii . An $\frac{1}{8}$ or $\frac{1}{12}$ part to be taken three times a day. This is a soluble neutral mixture, and is not unpalatable when given in a wineglass of water, with a little tincture of orange-peel added. The ammonia prevents any depressing effects. Dr. Holden has tried the free acid made into 3-grain pills with mucilage, as recommended by Dr. Latham in rheumatic fever, but has not found them superior to the mixture, while many patients object to swallowing five or six pills as a dose.

It is a matter of much importance, with regard to treatment, to be able to distinguish between the two kinds of diabetes. The presence or absence of rheumatic arthritis, pains, and cramps is often sufficient; but Dr. Latham has recently called attention to a more certain mode of distinguishing between the two, as he has found that in the diabetes of rheumatic persons—that is, originating in the

muscular tissue—the urine contains some substance which dissolves cuprous oxide; so that a larger quantity of Fehling's test has to be added before getting the brown precipitate in this urine than in the diabetic urine of hepatic origin.

To judge from the proportion of cases of diabetes in rheumatic persons, this kind of glycosuria can be by no means rare; and the early treatment of it with salicylic acid offers a real hope of cure, or, at any rate, it will relieve and prevent that tendency to wasting and exhaustion which has but one issue.

ON MEDICINAL SOAPS.

WHEREVER the objects of medicinal therapeutics meet those of general hygiene, as, for example, in the questions pertaining to food, dress, lodging, and articles of toilet—on this border-line of medicine and the various branches of technology—the aims and abilities of physician and technologist are very apt to collide. While the former is inclined to treat purely technical problems from a rather abstract point of view, and lacks the proper auxiliaries of the artisan, the latter is often apt to encroach upon tasks of a strictly medicinal nature. No wonder, then, that the results of action of either side alone are imperfect and unsatisfactory, and that success can alone be expected from the harmonious co-operation of both the physician and the technologist. This maxim holds particularly true in reference to medicinal soaps. It cannot be doubted that in this instance we have to deal with a therapeutic object of great hygienic importance, which we must acknowledge has hitherto not received the attention from the part of the profession justly due to it. As soaps are being applied at the present day perpetually by everybody to one of the most important organs of the economy, the skin, it ought to be the duty of the medical guardians of the communities to inquire into their nature and qualities with the same interest as they examine the milk and meat of the household. This interest ought naturally be much more intense in the case of medicinal soaps, which hitherto have almost wholly been left in the care of the technical laity. It is not a rare occurrence to meet with skin-affections which have been either caused or aggravated by the use of medicinal soaps obtained by the patient on his own accord. It is thus that we can find an acne resulting from the use of the "infal-

libile tar soap," or an eczema of the worst kind after the application of the "all-curing sulphur soap."

It is the merit of Dr. Unna, of Hamburg, —favorably known to the profession by the introduction of ichthyol, the keratine pills, and the ointment-mull,—to have mended this deplorable state of affairs by having prepared, in connection with competent and well-known chemists, a series of medicinal soaps of a constant strength and undoubted purity.

In the *Sammlung Klinischer Vorträge* by Volkmann (No. 252) we find an essay of the distinguished German dermatologist treating exhaustively of this subject.

The arguments which Unna advances for the eligibility of soaps as a form of applying medicines deserve our fullest attention. The physiology of the skin teaches us that soaps, consisting principally of the secretion of glands of animal skin, are readily taken up by the epidermis. Next to an alcoholic or an ethereal vehicle, which penetrates deeper than soap, soap is for both physical and physiological reasons the promptest and readiest method to medicate the epidermis. It far surpasses in efficacy and reliability the vaseline, glycerin, or paste bases, and is particularly suitable for the various medicines having the character of a salt. Three other great advantages of the soap as a medium of medication are to be mentioned: viz., its antiphlogistic virtues, its economical nature, and its cleansing effects.

Unna regards as indications for the use of medicinal soaps the following: 1, a dermatosis of a universal but light nature which we desire to treat with as little molestation of the patient as possible; 2, if, during the suspension of a vigorous treatment, a milder and simpler medication is desired; 3, if, after the recovery from grave skin-affections, a milder but protracted after-action is intended; 4, if we deal with patients who show a peculiar predisposition for relapses of certain affections, such as eczema pruriginosum, psoriasis, etc. The great permeability of the upper strata of the human integument for soaps is, after all, in Unna's estimation, the greatest advantage in the use of medicinal soaps. He unhesitatingly declares that by the prolonged use of medicinal soaps the strongest impression can be made not only upon the skin, but also upon the entire organism. As an illustration of this influence, he cites the curative results of a thirty-three and one-third per cent. Hg. soap on syphilides of the skin and syphilis of other organs. In his practice he

has obtained such satisfactory results with this mercurial soap that he no longer resorts to the inunction cure. The advantages and peculiarities of the soaps prepared according to Unna's directions are in brief as follows: 1, as basis purest beef-tallow exclusively is used; 2, as alkalies freshly-prepared soda and potash lye are used; 3, all soaps are surcharged with fat (*i.e.*, they contain three or four per cent. of free fat in excess to the quantity needed for saponification) to prevent the congestion and desquamation following upon the prolonged medication of the epidermis by a neutral (medicinal) soap; 4, this surcharge of fat consists of olive oil (to eight parts of beef-tallow one part of olive oil is added); 5, the surcharge of fat allows of a better conservation and greater concentration of acids and easily decomposable salts, such as salicylic acid and corrosive sublimate; 6, the soaps contain not more than about fourteen per cent. of water; 7, secondary additions of glycerin and vaseline are excluded; 8, the soaps are not perfumed.

Unna details three methods of applying his "surfatted" soaps. The least energetic is the ordinary mode of washing. If a stronger effect is desired, he directs the affected portion of the skin to be covered with the lather of the soap and then to be rubbed with a dry towel. The greatest effect is, however, obtained by applying a thick lather to the skin and allowing it to dry without the use of water or towel.

The soaps which have been hitherto prepared and tested are the following:

1. Surfatted ground-soap, consisting of potash and soda lye. Use: as an ordinary soap, especially in children, and as a prophylactic agent for cracked and fissured hands.

2. Surfatted marmor soap. Composition: four parts of surfatted ground-soap and one part of finest marmor powder. Use: in acne and all parakeratoses.

3. Surfatted ichthyol soap. Composition: nine parts of surfatted ground-soap, one part of sulpho-ichthyolate of sodium. Use: in all forms of rosacea.

4. Surfatted salicylic soap. Composition: ninety-five parts of surfatted ground-soap, five parts of salicylic acid. Use: in subacute and chronic eczemata, acne, and parasitic affections of the skin.

5. Surfatted zinc-salicylic soap. Composition: eighty-eight parts of ground-soap, two parts of oxide of zinc, ten parts of salicylic acid. Use: in eczema, seborrhœa, hyperhidrosis, and bromidrosis.

6. Surfatted tannic acid soaps. Of these there are three kinds, made respectively with sodium, oxide of zinc and sodium, and zinc alone. Use: in eczema and pemphigus.

7. Surfatted rhubarb soap. Composition: ninety-five parts of ground-soap, five parts of alcoholic extract of rhubarb. Use: in parasitic skin-affections of a light type and intertrigo.

In addition to these soaps which have received a sufficiently thorough clinical testing to claim our confidence, Unna directed the preparation of the following soaps for which neither indications nor effects have as yet been very definitely established: surfatted tar soap, containing five per cent. of *pix liquida*; surfatted sulphur soap, containing ten per cent. of sulph. *præcip.*; surfatted tar-sulphur soap, containing five per cent. each of *pix liq.* and sulph. *præcip.*; surfatted camphor-sulphur soap, containing five per cent. of camphor and ten per cent. of sulph. *præcip.*; surfatted camphor soap, containing five per cent. of camphor; surfatted borax soap, containing five per cent. of borax; surfatted iodide of potassium soap, containing five per cent. of iodide of potassium; surfatted naphthol soap, containing five per cent. of naphthol; surfatted naphthol-sulphur soap, containing five per cent. each of naphthol and sulph. *præcip.*

The carbolic soap prepared by Unna is, according to his own judgment, a useless article, which epithet he claims belongs to all so-called carbolic soaps in the market. With oxide of lead, arsenic, and the white precipitate Unna has also experimented in order to prepare soaps having these metals as bases, but has not yet reached the satisfactory results aimed at. The sublimate soap prepared by him has given very gratifying results in *pytiasis capitis*, *acne*, *lichen ruber*, *lupus*, and *syphilis*, but has not yet come up to the state of perfect stability attained in the other soaps.

The use of the medicinal soaps is still in its initiatory phase, but promises to expand into an ordinary and convenient mode of applying medicine after all technical difficulties have been successfully overcome.

ON LANOLIN.

IN the March issue of the GAZETTE our readers found a brief exposition of the practical uses of lanolin. We see from the reports of the European medical press that this

novel agent is rapidly gaining popularity, and fully sustains the anticipations with which its discoverer, Prof. Liebreich, of Berlin,* introduced it to the professional world. In view of this fact it becomes a matter of necessity for the American practitioner to familiarize himself with the drug, which no doubt will soon appear in the American market. We therefore beg to represent somewhat explicitly to our readers our present state of knowledge on lanolin, its origin and properties. The wool of sheep, as taken directly from the animal, contains considerable quantities of fatty substances which have to be removed before the wool can be utilized. Formerly this fat was simply thrown away, and only recently—thanks to the economical tendency of our days—it has been collected and put to practical uses. Hartmann and Schulze were the first to chemically investigate this so-called wool-fat, and to demonstrate its actual composition, viz., ethers of fatty acids and cholesterin.

Liebreich went a step further, and showed that cholesterin fat occurred in all keratine tissues (skin, hair, whalebone, feathers of geese, chickens, etc.). Liebreich also showed that the cholesterin fat was not, as hitherto believed, secreted by the sebaceous glands, but was formed in and simultaneously with the keratine tissue. Lanolin, the cholesterin fat of the market, contains about twenty-five per cent. of water, and differs from all other fatty substances chiefly in resisting saponification and the influence of water. Hence lanolin has no tendency to become rancid.†

Dietrich‡ pointed out the therapeutically important fact that lanolin can take up a large amount of water (up to one hundred and ten per cent. of its weight) without losing its suppleness and ointment form, while unguentum paraffini under equal conditions can take up only four, *adepts suillus* only fifteen per cent. Equally readily can lanolin be incorporated with fats, oils, balsams, and most medicinal bases, furnishing ointments of a hitherto unattained efficacy and constancy.

The principal value, however, of lanolin consists in its unrivalled resorbability, insuring for the medicines incorporated with it the maximum amount of attainable efficacy. At the same time, it is certain that lanolin does not in any way injure nor irritate the skin.

* Liebreich, it will be remembered, is also the discoverer of the hydrate of chloral.

† *Berl. Klin. Woch.*, No. 47, 1885; *Pharm. Zentralh.*, 1885, p. 534; *Pharm. Zeit.*, 1885, p. 872.

‡ *Pharm. Zeit.*, 1885, p. 978; *Deutsche Med. Woch.*, Dec. 1885.

Dr. Lassar has exhibited lanolin at his polyclinic for skin-diseases in Berlin in about four hundred patients, and regards its introduction into the Pharmacopœia as a desirable acquisition. Reporting his observations on lanolin in the December issue, 1885, of the *Deutsche Mediz. Wochenschrift*, Lassar pointed out the remarkable readiness of its absorption, and among other advantages of the drug mentions its minute distribution, which even allows of the entrance of cinnabar-lanolin into the deeper strata of the integument. Under the influence of lanolin, Lassar says, the skin assumed a peculiar tense condition, a state of turgescence which favors absorption of medicinal agents. Lassar also demonstrated to the Society of Physicians of Berlin, by microscopic specimens, that cinnabar and mercury allowed of a much finer distribution when combined with lanolin than with adeps.

If the skin is tender and irritable, lanolin does not cause œdematous swelling nor any other untoward symptom, as often observed under the influence of other fatty substances. The power of lanolin to penetrate into the deeper strata of the skin renders this agent peculiarly eligible in psoriasis, herpes tonsurans, chronic dermatitis, and the numerous skin-diseases marked by a callous condition of the epidermis. Again, the stated peculiarities of lanolin render it admirably fitted for the application of chrysarobin, pyrogallie acid, salicylic acid, naphthol, the preparations of mercury, resorcine, iodide of potassium, and *sapo viridis*. In this connection we recall the researches of Dr. Patschkowsky,* with lanolin and potassium iodide; he proves that one-half to one hour after the inunction iodine could be recovered from the urine, while the experiments with the officinal ointment of iodide of potassium resulted negatively. Kaspar, of Geneva, obtained similar results.†

Prof. Fränkel, of Berlin, recommends lanolin ointments for application to mucous membranes, for he found them to prevent the formation of scabs and to diminish purulent secretions. Prof. Rübener noted also the superiority of lanolin in combination with preparations of mercury, sulphur, and tar. A five per cent. carbol-lanolin ointment has been found by Dr. Herrlich (of the German army) to produce local anæsthetic effects (*Pharm. Zeitung*, 1885, p. 978).

In Berlin, lanolin has been successfully tried in ischias (combined with ichthyol), in ichthyo-

sis, in hemorrhoids and burns (combined with cocaine).

In conclusion of these remarks, we state that in the majority of instances it will be necessary to add twenty per cent. of lard to lanolin in order to correct its consistency.

Reports on Therapeutic Progress.

THE THERAPEUTICS OF THE NEUROSES.

In the *Brit. Med. Journ.*, April 24, 1886, DR. E. E. LONG FOX publishes an extremely valuable paper on the therapeutics of the neuroses, which contains so many novel and important practical points that we offer a full abstract of it to our readers.

In the first place, although neuroses are devoid of any recognized pathological anatomy, there can be no doubt that they are evidences of depraved or disordered nutrition, or, at least, of abnormally altered relations between nerve-cell and supplying blood-vessel.

Neurotic patients frequently inherit from one or both parents the tendency to their peculiar nervous state; but a large number of neurotic phenomena occur in persons who have inherited no such history. They are met with after overpressure of study in the young, overwork of any kind in the adult, monotony of occupation, anxiety, hygienic conditions abnormal both as regards the healthiness of the environment and the proportion of brain-food to brain-work; and they mean partial starvation of the nervous centres.

A few of the chief neurotic symptoms are: dilated pupil; extreme mobility of the iris; a form of amblyopia that is reflex, of vaso-motor origin, induced by irritation of some of the branches of the fifth nerve, or of filaments from the abdominal or pelvic organs, carried to a vaso-motor centre, and causing constriction of the arteria centralis retinæ, or probably sometimes of the vessels supplying the angular gyrus; hemiopia, associated with anæsthesia, and depending on disordered blood-supply to the posterior portion of the internal capsule; various forms of anæsthesia, often very localized, manifestations of a temporarily impaired circulation in the cortex or in the internal capsule, often due to the concentration of the patient's attention on pain elsewhere, or to her thoughts being directed to her emotions or to exalted aspirations; some forms of headache, especially migraine, and the so-called nervous head-

* *Pharm. Zeitung*, 1885, p. 978.

† *Deutsche Med. Wochenschr.*, Dec. 1885.

ache often induced by late watching ; insomnia, particularly the form engendered by late intellectual work for some considerable period, and relieved by placing a patient for sleep in a nearly upright position, and administering food during the night, or by the administration of ergot ; tinnitus, which may often be reflex, and carried up to the tympanum by way of the inferior cervical ganglion ; abnormal acuteness of hearing, from ephemeral dilatation of a vessel supplying some of the auditory nuclei, or still more frequently the temporo-sphenoidal convolutions ; vertigo, either seeming to depend on slight alterations of pressure in the labyrinth, short of Menière's disease, or when there is a temporary deficiency in the circulation of the middle lobe of the cerebellum ; occasional abnormalities of depraved or deficient taste and smell. Motor phenomena in neurotics are so numerous that it is difficult to omit any abnormality of movement from this class ; tremor, as of the eyelids ; rigor without elevation of temperature ; convulsions, either epileptiform, or without complete loss of consciousness, and accompanied by movements of limbs either semi-voluntary or automatic ; opisthotonos ; hysterical vomiting, with no reflex connection with the pelvic viscera ; some varieties of chorea and of hemichorea ; paralysis, too universal to depend upon organic lesion, or localized, as of a finger, hand, or arm ; contractions, such as torticollis, varieties of talipes, bent arm, the body resting on the heels from flexion of the legs on the thighs ; these and many other advanced motor phenomena depend on emotion, and are produced by emotional irritation of vaso-motors in various regions of the brain and cord.

The hyperæsthesiæ of skin, such as are seen in some neurotics of unsound mind ; hyperalgesiæ, such as clavus, and the obscure inframammary pain, the tenderness of the hysteric spine, are due to dilatation of vessels in the sensory centres.

Among the psychical phenomena, it would be necessary to mention every manifestation of emotion. The subjects of "temper-disease" are probably invariably neurotic. Great excitability may be the rule, reaching on one side even to mania, especially religio-erotomania ; whilst in some cases, the melancholy tendency obtains, with concentration of thought on anything connected with the patient herself, especially her physical ailments.

Of sympathetic phenomena, some connected with the eye have been already referred to. Blushing, pallor, palpitation, faintness, irregu-

larity of heart, neurotic angina (in each case unassociated with organic lesion), various hyperæsthesiæ of the abdominal cavity, colic, gastralgia, enteralgia, hepatalgia, nephralgia, inertia of bowels, disordered secretions, some forms of diarrhœa, meteorismus, and phantom tumor are all connected with emotional action on the circulation ; either by way of the vaso-motor centres in the medulla, of the subordinate centres in the spinal cord, of the cervical ganglia, or of the great ganglia in the abdomen.

Among sympathetic phenomena may be placed the copious pale urine of the hysterical, and the various neuroses of the extremities. Of these, one of the most remarkable is the symmetrical gangrene of the extremities, occurring without blocking or disease of arteries.

It is seen, therefore, that the protean phenomena in neurotic patients are due to an abnormal excitability of the sympathetic nerves and ganglia. Given this excitability, the sympathetic system is played upon directly by emotion, reflexly by irritation, or by slight functional disturbance affecting a ganglion, or any nerve-twig leading to a ganglion. Although, therefore, the different neuroses may demand a treatment that varies according to the organ affected, yet no treatment is likely to be effectual that does not act on first principles, and endeavor to subdue, generally by means of nerve-tonics, this morbid excitability.

If one seeks a term that will express the predisposing cause for neurotic phenomena, one must use some word that will mean "starvation of nervous centres." This may be either a cell-condition *ab origine*, or a cell-condition induced by a disorder of vessel. Remedy for it may, therefore, take the form of better nutriment to the cells (fatty and farinaceous food), or of means that will improve arterial tone, and so foster a normal osmosis. Pretty frequently both classes of remedies are called for, and, in some cases, neither will be really efficacious until the patient is removed from an environment either of depressing circumstances, or of a malarial or other toxic atmosphere.

Besides the question of food, that of the promotion of a normal circulation takes first rank. Dr. Fox is speaking, of course, of cases in which there is no coarse lesion. In such patients, the occurrence of neurotic phenomena may be prevented by exciting a better condition of heart-action, by increasing arterial tension, or by obtaining both these effects.

Ammonia, ether, iron, digitalis, strophanthus hispidus, convallaria majalis, strychnine, belladonna, and, in very moderate doses, alcohol, stimulate the heart. It is nearly certain that, in a slight degree, alcohol in small doses really stimulates the heart, over and above its paralyzing effects on the vaso-constrictors. In a much slighter degree, arsenic and jaborandi are heart-stimulants. Arterial tension is increased by ergot, belladonna, the bromides, the acids, squill, Calabar bean, strychnine, nitrate of potassium, casca bark, and turpentine.

But over and above brain-feeding, and increase of cardiac action, or of arterial tension, there is something that takes place in the walls of vessels under the influence of such agents as arsenic, the salts of zinc, caffeine, nux vomica, guarana, etc., that seems to prevent undue constriction and undue dilatation of vessels, especially probably the smaller arterioles and the capillaries; the effect of which influence is to promote a normal osmosis, the taking in of supply from vessel to cell, the giving out effete material from cell to venule.

The important points in all neuroses are the abnormal influence of emotion, and the excitability of nerves and ganglia to reflex irritation. As the channel for the transmission of emotion is eminently a vaso-motor one, and as excitability to reflex irritation is evidence of deficient tone, it stands to reason that so-called sedatives are poor treatment. The tendency should be to give tone to the nerves and ganglia, vaso-motor and other; at first, perhaps, by ergot, by hazeline, by acids, by abundant food; and, later on, by iron, paying attention all through to mental influences.

In certain circumstances, a tonic treatment is not enough for reflex vomiting. A peculiarly difficult form to treat is the vomiting of phthisis, in which, presumably, irritation of the pulmonary branch of the vagus is carried to the medulla, and reflected down both on its gastric branches and on the phrenic nerves. This, even if very obstinate, may be met by hypodermic use of cocaine, though the *rational* of its effect is not well known. It may act by causing anæsthesia of the pulmonary branches of the vagus, or by rendering the centre of the reflex arc less easily excited. In the latter case, it may have a tonic effect by its constricting power over vessels.

It would not be right to call chorea invariably a neurosis. Some cases, and generally those the least amenable to treatment, depend on organic lesions; but, in the large majority of cases, no such lesion exists; and in them a sedative treatment acts very imper-

fectly, as compared with a tonic. The salts of most of the metals are useful in this relation, and those of arsenic and zinc pre-eminently so. In low-lying districts with a damp soil, the consensus of large bodies of medical men is in favor of iron; and, doubtless, in this respect, the particular therapeutical agent will vary with the surrounding circumstances; but the principle is the same.

Then, again, as to the imperfectly known neuroses of the extremities:

1. A tingling is met with of all the extremities, both hands and both feet; sometimes with a normal appearance of the skin, sometimes with a waxy blanching. It is a neurosis, but a neurosis depending upon a great variety of causes. The tingling is a reflex manifestation of irritation at a distance, in the stomach, uterus, intestine, etc.; perhaps sometimes from the peripheral nerves themselves, exercising a paretic effect either on portions of the cortical sensory area or on the cervical and lumbar bulbs, or on all these coincidentally, or on the vaso-motor ganglia on the vessels themselves; or it may be due to deficient heart-power, and then is accompanied by the waxy blanching of the skin, and with more or less local loss of temperature.

2. Cases are met with in which both cerebro-spinal and sympathetic nerves are involved; and pain, heat, and vascular congestion alternate with pallor, cold, and absence of pain.

3. There is a state of semi-paralysis of the blood-vessels of the extremities, causing flushing of the feet, and generally pain and tenderness. Pain may precede the vaso-motor phenomena. The feet are more commonly affected than the hands.

4. There may be a great coldness of the feet, or of the fingers, associated with contraction of the vessels of the extremities. It is possible that this condition is closely allied to the first variety, and may depend on deficient *vis à tergo*; but it has been thought to be due to overexcitation of the vaso-motor centre.

5. A further stage of this, even if it may not be considered a separate variety, is one in which symmetrical gangrene is the direct result of contraction of vessels. In all these varieties, the vessels themselves are neither occluded nor diseased. It would be against experience to say that these neuroses occur only in patients who have inherited a neurotic tendency. They seem frequently to be set up by the circumstances of the environment. Some varieties are associated with

dilatation of vessels, and in these the use of ergot and of nerve-tonics is essential; but in the forms that own a constriction of vessels, the opposite treatment would hardly be successful. Friction, gentle galvanic currents, tonics, the removal of the sources of reflex irritation, and a due regard to a sufficient *vis à tergo*, will do more than paralyzing drugs, or even than the application of external heat.

In the same line of thought, much might be said on many of the neuroses; on exophthalmic goitre, which, in some of its phenomena, may be included in this category; on diabetes insipidus, often recovered from under ergot and galvanism; on vaso-motor insomnia; on heat-exhaustion and heat-fever, in the first of which depression of nerve force must be met by strengthening remedies, in the latter, the paralysis of heat-controlling centres by quinine; on the non-organic forms of angina pectoris, in which the recurrence of the attacks would be badly met by sedatives and antispasmodics.

THE PHYSIOLOGICAL ACTION OF BENZOYL-ECGONINE.

MR. RALPH STOCKMAN has published in the *Pharm. Journ. and Trans.*, April 24, 1886, a study of the physiological action of benzoylecgonine. He has found that when $\frac{1}{16}$ to $\frac{1}{4}$ grain is administered subcutaneously to a frog the animal remains apparently unaffected for half an hour or more, at the end of which time it begins to develop signs of muscular stiffness, and shows great unwillingness to move. The pupil gradually becomes dilated. In eighteen to twenty-four hours after administration the reflexes become greatly exaggerated, this increasing until the slightest irritation brings on a tetanic spasm. This condition may last one or several days, and the frog ultimately recovers or dies of exhaustion. Such, briefly stated, are the effects of a medium dose, the same train of symptoms being manifested in a greater or less degree with larger or smaller amounts.

Division of the spinal cord at the medulla had no effect in stopping the convulsions after they were once established.

Action on the Heart.—With moderate doses the rapidity of the heart's action was increased, while large doses, after inducing great irregularity of action, caused it to stop in diastole.

No effect on the vessels of the web could be observed.

Nervous System.—The spinal cord, as before indicated, is thrown into a state of great reflex excitability, exactly similar to what occurs in strychnine-poisoning.

The sensory and motor nerves remain quite unaffected.

Striped Muscle.—It acts as a muscle-poison apparently similar to caffeine, but not nearly so active.

On mammalia he has not had sufficient material to carry out a satisfactory number of experiments. A rabbit which received 24 grains subcutaneously remained apparently little affected.

Cats are more susceptible. On administering 24 grains subcutaneously, the animal shortly after became very uneasy, and was seized with diarrhoea and vomiting, while the pupils were very dilated. Half an hour after, a violent tetanic spasm supervened. During the next few hours the animal had almost continuous convulsions, and finally died of exhaustion. The heart was in diastole, and the small intestines so firmly contracted as almost to occlude the lumen.

From the foregoing description it is evident that benzoylecgonine is practically identical with caffeine in its action, although there are some minor points of difference.

The chief action of cocaine, namely, paralysis of sensory nerves, is quite absent; in fact, the relationship between the action of the two substances seems to be as profoundly altered by the subtraction of a methyl-group (CH_3), as is the case with methyl-strychnine and strychnine.

THE COCCI OF CROUPOUS AND HYPOSTATIC PNEUMONIA.

DR. LEBASHOFF publishes in the *Russian Weekly Clinical Gazette* an account of some observations made with a view to determine the frequency with which microbes are present in cases of croupous and hypostatic pneumonia. He examined sections, the liquid contained in the lungs, the contents of the smaller bronchi, and also the fluid of the cerebral ventricles, and in some cases the blood from the heart and large venous trunks. The ordinary methods of staining not being very satisfactory, the author undertook a series of observations for the purpose of improving upon them, and found that the best method of staining lung-sections was to immerse them for from two to five minutes in an aniline solution of gentian violet, and afterwards for from four to fifteen minutes in an aniline or watery solution of eosin, then to wash them

and dry them with alcohol, and finally to treat them with clove or cedar oil. By this method of staining the micro-organisms could be seen to be distributed in a very irregular way, usually in groups. The cocci found in the centre of a lobulus always preserved their ordinary form, and were strongly stained; while single cocci towards the circumference were often hardly to be distinguished, being but slightly stained. While some of the cocci presented a distinct envelope, others apparently of the same variety were seen close to them without any envelope at all. The size of the pneumococci was not constant, this being perhaps due to the manipulations the sections had undergone in preparing them for examination. The cocci seen by the author entirely corresponded with those described by Friedländer. Altogether there were examined forty-eight cases, forty-one of croupous and seven of hypostatic pneumonia. In the latter class of cases it did not seem that any characteristic cocci were constantly present, while in the forty-one cases of croupous pneumonia Friedländer's cocci were found in the lung-tissue in thirty-eight cases. In eleven of these the fluid of the cerebral ventricles was also examined, cocci being found in eight. In the earlier stages of the disease the number of cocci was small; this gradually increased, attaining its maximum when red hepatization was changing into gray. The blood was examined in twelve cases, but no pneumococci could be discovered. The observations were carried on by cultivations in jelly and inoculations of animals. For cultivations in jelly the liquid from the lungs, the blood, and the fluid of the cerebral ventricles were used. Two kinds of colonies were met with. One kind was obtained after inoculation not only of pneumonia but of other diseases, and of putrescent blood. The second kind differed from these in being of a dull white without any admixture of gray, and in being distinctly raised above the surface of the jelly. This kind was only observed after inoculation from croupous pneumonia. From ten inoculations with pneumonic lung-juice these colonies were obtained eight times; five inoculations with ventricular fluid were twice successful, and three inoculations with blood only once. Experiments with mice showed that when these animals were inoculated from colonies of the second kind they developed croupous pneumonia, and in one case out of three in which the grayish cocci were inoculated croupous pneumonia also followed. The author remarks that further observations are necessary

on this subject, since mice are very subject to croupous pneumonia, and it is possible that numbers of other micro-organisms may have the power of setting up the disease in them.—*Lancet*, April 17, 1886.

CIRCUMCISION UNDER COCAINE.

Various experiments have been made with solutions of the hydrochlorate of cocaine with the object of producing such local anæsthesia of the prepuce as would result in a painless circumcision. The results of quite a number of such efforts, while greatly lessening the pain of circumcision, have not been entirely satisfactory. In the last two operations, however, which Dr. F. N. OTIS (*N. Y. Med. Journ.*, May 8, 1886) reports having done by a new procedure, the first was entirely painless; in the second there was only slight sensitiveness in putting in the last few stitches.

The plan pursued was as follows: Retracting the prepuce, 3 or 4 drops of a six per cent. solution of hydrochlorate of cocaine were injected with a fine hypodermic needle into the internal layer of the prepuce about half an inch from its attachment at the base of the glans penis. This was done so superficially that, as the needle was withdrawn, a little bleb was formed nearly half an inch in length. Waiting for half a minute, the needle was again introduced at the opposite side of the bleb, and it slid in painlessly for another half-inch in the line of the circumference of the penis. In this manner blebs were made until the cervix was completely encircled by them.

The prepuce was then drawn forward, and, by a simple procedure, another line of blebs was made to encircle the external preputial layer at the point elected for the incision. This was intended to be directly opposite the line of injection of the internal layer. The prepuce was then advanced so that the line of injection cleared the end of the glans, at which point it was compressed by a clamp, and excised without the least pain.

The clamp was then removed, the internal layer of the prepuce was slit up, turned back, trimmed with the scissors, and attached to the incised edge of the external layer by continuous suture, comprising about twenty stitches. Not the least pain was experienced in the operation except that caused by the first introduction of the needle in the internal layer, and the same in the external layer. Twenty drops of the six per cent. solution

were used in this case. In the second 25 drops of a four per cent. solution were injected. The chief embarrassment of the operation consisted in the fixation of the delicate tissues so as to introduce the needle with accuracy, superficially, and to a sufficient extent. An ordinary mouse-tooth forceps answers very well, but a forceps in which the needle can ride would be an advantage.

TREATMENT OF ACNE.

DR. MAHLON HUTCHINSON believes that in ninety per cent. of the cases of acne of all forms, the exciting cause lies in the genito-urinary organs. Acne may be said to almost invariably manifest itself at the age of puberty, and this happens in such a large and overwhelming majority of cases that it must be considered as more than a coincidence. Until recently he had treated all his cases of acne, with few exceptions, with potassium bromide and tincture of gelsemium, accompanied with local applications of green soap and sulphur ointment, the success, however, being barely moderate; it then occurring to him that there might be some connection between the occurrence of acne and the genito-urinary organs, he commenced using the cold urethral sound, and he stated that his success was startling often to himself. In one week the improvement was very noticeable, and in six weeks he might have dismissed them cured to all external appearances. He states that in these cases, as in all others, there is actually nothing to direct one's attention to the genital organs, and yet he finds in the last twelve months that of the nineteen cases of acne which he has treated in the male, and seven in the female, fifteen of the former and six of the latter have recovered entirely, while the other five did not continue their treatment long enough to form any opinion of his success or failure. In most of his cases the sound was used exclusively, although he also invariably gave a placebo. His plan has also been for the first three weeks to give some laxative preparation accompanied by the local application of green soap, benzoin, and sulphur ointment. The improvement, except in the mildest cases, is scarcely if at all perceptible. At the end of three weeks he is then in the habit of proposing the use of the cold sound, and, after carefully and plainly explaining its nature to the patients, he has never yet met with a refusal to try its use. One or two weeks only are needed to prove the success of his treatment, and in one or two

months the skin will be free from acne, but with numerous scars left to remind them of the past. As regards the treatment of acne in the female the cold sound would be useless, while its analogue, the uterine sound, would also, for numerous reasons, be out of the question, there being no probability of benefit derived from its use. But the object is to reduce the supposed hyperæmia and allay irritation; this he finds is readily accomplished by means of the hot douche, and he finds that that being the case, acne is also readily cured in the female by the simple use of the hot vaginal douche. Six out of seven cases thus treated have been eminently successful. Dr. Hutchinson reports five cases treated in this way in detail, in all of which success was obtained. He further adds that in the mild forms of acne local medication, aided by the internal exhibition of arsenic, is sometimes sufficient to produce cures. In those, however, to which he alluded as cured by this method, the treatment with the cold sound and hot-water douche, the mild types have been excluded. As adjuvants to the cold sound and hot-water treatment he has used the following prescriptions, but has derived but little benefit from them when used alone:

R Tr. benzoin. simp., ℥ss;
Aque, ℥i. M.
Sig.—Face-wash.

R Sap. viridis, ℥viii;
Aq. cologn., ℥iv. M.
Solve et filtra. Sig.—To be used as cleansing face-wash.

R Sulphur precip., ℥ii;
Ung. vaseline, ℥vii. M.
Sig.—Apply once a day.

The above is a useful ointment, more useful, however, in acne rosacea than in acne vulgaris.

As a laxative mixture the following:

R Ferri sulph., gr. xv;
Acid. sulph. dil., ℥iiss;
Magnes. sulph., ℥ii;
Aque, ad ℥vi. M.
Sig.—Two drachms half an hour before breakfast in half a glass of water.

Arsenic given in the following form is sometimes quite efficacious:

R Sol. arsen. br. (Clemens), ℥ii;
Aque, ad ℥iv. M.
Sig.—One drachm t. i. d., gradually increased to two drachms t. i. d.

*A NEW METHOD OF ESTIMATING THE
CONDITION OF THE RIGHT SIDE
OF THE HEART.*

In September, 1885, DR. W. PASTEUR called attention to a distention of the superficial veins of the neck which occurs when, under certain circumstances, pressure is exerted over the liver. He has since then had an opportunity of examining a large number of patients with positive and negative instances of this phenomenon, and he records the results of this examination in the *Lancet*, May, 1886.

The physical sign in question is a distention or overfilling of the external jugular veins, apparently from below, with or without pulsation or undulation, which takes place when pressure is exerted in the right hypochondriac or epigastric regions with the flat of the hand, the direction of pressure being backwards and upwards. Before proceeding to make the examination the patient should be placed in the recumbent posture, with the neck slightly extended and the head turned a little to one side, while care is taken that the muscles of the neck are not in a state of tension. The sign is usually best marked on the right side, but may in almost every case be demonstrated on the left side also. It is essential that the movements of respiration should be normally maintained throughout the examination.

He has frequently observed a partial filling-in of the supra-clavicular fossa at the moment when pressure is first exerted. This is especially marked in thin subjects, and may be accounted for to some extent, perhaps, by simple mechanical displacement, but is chiefly due to an involuntary arrest or modification of breathing, and almost invariably subsides in a few moments. The amount of pressure required varies in different individuals. In rare cases rigidity of the abdominal muscles renders the manœuvre quite impossible. The presence of moderate ascites is no impediment, but excessive distention of the abdomen with fluid or gas renders the necessary manipulation more difficult and sometimes impossible. The pressure should be exercised gradually and steadily, otherwise an attack of coughing is liable to be induced, particularly in cases of bronchitis. The patients rarely complain of any pain or even discomfort, but on the occurrence of the least pain the manipulation should be at once discontinued.

Dr. Pasteur reports a case which affords a good illustration of this phenomenon, and he

believes that it is invariably met with in cases which show evidences of great over-distention or failing compensation in the right heart. He believes it to be invariably present in well-marked tricuspid incompetence, whether functional or due to disease of the valves. But besides these there are a considerable number of cases which ultimately recover, in which the sign is present with varying intensity at one period or other of the illness. Such are instances of mitral valvular disease, whether regurgitant or stenotic, and of chronic pulmonary emphysema, complicated with acute or severe general bronchitis. The question naturally arises, whether the distention in these latter cases (emphysema, etc.) should be regarded as evidence of slight tricuspid incompetence or simply of great over-distention of the right heart falling short of failure of the tricuspid valve. It is to be noted that these are precisely the cases in which the question of tricuspid incompetence has to be considered from a prognostic point of view, and is often left undecided. Venous pulsation is generally absent, and often the cervical veins are but slightly distended. Not infrequently there is undulation at the spot where the distention of the vein ceases. This may be systolic only, or double, and synchronous with the heart-beats. The valves in the external jugular veins are usually competent, and the veins empty completely with each inspiration. The effect of pressure below the ribs varies in these cases with the amount of obstruction to the venous return: 1. In the least-marked cases, the vein, although not perceptibly distending under the pressure, is seen, nevertheless, not to empty completely during inspiration. 2. In others a degree more severe, a moderate distention results; the vein becomes visible as far as the anterior border of the sterno-mastoid muscle, more rarely as high as the angle of the jaw. At the same time the spot where undulation was visible becomes shifted higher up the vein, and the character of the undulation is not infrequently modified, the double variety being replaced by a single systolic flicker, the single variety occasionally disappearing altogether. 3. In cases yet more severe, but in which the usual signs of tricuspid regurgitation are not developed, the pressure sign is often elicited with great distinctness, with or without undulation, and is here to be regarded as indicating early tricuspid failure. In the second class of cases, which differs from the third in degree, only there is great over-distention of the right heart, falling short, however, of re-

gurgitation, possibly with excessive strain on the valve-cusps.

The mechanism of the production of this phenomenon is probably complex. Without presuming to offer a complete explanation, Dr. Pasteur suggests that the following factors probably enter into it: 1. Compression of the inferior vena cava by the liver, especially in cases where this organ is enlarged. This factor, however, probably acquires more importance in cases of tricuspid regurgitation, with pulsating liver. 2. Lessening of the inspiratory action of the thorax through interference with the movements of the diaphragm. 3. Direct mechanical interference with the proper movements of the right side of the heart. A glance at the anatomical relations of the right auricle and ventricle to the diaphragm and subjacent liver will suggest the possibility, not to say probability, of such interference.

There can be little doubt that the effect of subcostal pressure, whatever the mechanism of its action, is to put increased difficulties in the way of the proper action of the right side of the heart, so that the pressure-sign in cases where the tricuspid valve is considered to be still competent is to be looked upon as a measure of the capacity still possessed by the right heart to combat increased resistance. In cases where the tricuspid valve is incompetent, the effect of the pressure is to aggravate the conditions under which the heart is already unable to do its work, with a proportionate increase in the signs of that inability. This subcostal pressure-sign possesses undoubted value as a means of diagnosis, and may also afford valuable information as to the progress and ultimate prognosis of many cases in which we are now reduced to mere conjecture for want of some definite, tangible index of the condition and working power of the right side of the heart.

A NEW DIAGNOSTIC TEST FOR TYPHOID FEVER.

Statistics regarding the therapeutics of typhoid fever are almost always seriously vitiated by doubts as to diagnosis. This is more especially the case with the alleged abortions of typhoid. It is very desirable, therefore, to have some definite test of the presence or absence of the disease in its early stages. The temperature curve is known to be often far from typical; the roseola does not appear, if at all, until from seven to twelve days; there are, in fine, no pathognomonic symptoms in the earlier stage of the disease.

Several observers have recently tried to establish a method of making the typhoid bacillus of Eberth a means of positive diagnosis. This bacillus is now quite generally conceded to be a constant accompaniment of the disease in question, and of no other.

Attempts to find this bacillus in the blood have not been very successful, although Neuhäus (*Berlin. Klin. Wochen.*, 1886, No. 6) observed them in blood taken from incisions made near the roseola spots. M. Bouchard has also found the bacillus in the urine. Recently Philopowicz (*Wien. Med. Blatt.*, 1886, Nos. 6 and 7; *L'Union Médicale*) has communicated the results of his personal experience in the examination of blood drawn from the spleen of typhoid patients. Having washed the skin with a solution of bichloride, 1 to 1000, he inserted the needle of a hypodermic syringe, previously sterilized, between the ninth and tenth ribs, and withdrew some of the splenic blood and juice. In this he was able to recognize the bacilli of Eberth, and produced cultivations showing their specific character. All this was done in four patients, before the appearance of any roseola. There does not seem to be any great inherent difficulty in using this method of testing the nature of a suspected fever, provided, of course, that subsequent experience confirms the results of Philopowicz. Such a method cannot be made a routine one, but in hospitals it may be frequently used, and by it perhaps the much-disputed question as to whether typhoid fever is ever aborted can be settled.

In this connection the editors of the *New York Med. Rec.*, May 22, 1886, call attention to the daring experiments of M. Payon (*L'Union Médicale*, No. 115, 1885), who inoculated pure and attenuated cultures of the typhoid bacillus upon himself and five other persons, without producing any definite symptoms of typhoid fever as it occurs in man.

THE ACTION OF ANTIPYRIN.

DR. J. H. FRANKENBERG reports in the *Med. Rec.*, May 22, 1886, that his experience with antipyrin for the last eighteen months warrants the following conclusions:

1. We possess in antipyrin an antipyretic which will reduce temperature most powerfully and rapidly.

2. It is in the great majority of cases perfectly safe; only in very much depreciated states and in delicate children must it be warily given and guarded by cardiac stimulants.

3. It lacks nearly all the disagreeable features which other antipyretic drugs possess. Perspiration occurs in a large proportion of cases, but does not seem to enervate the patients or render them uncomfortable. Pruritus occasionally coexists with the eruption. Vomiting now and then occurs.

4. It may readily be introduced into the system through various channels. Its taste is not particularly disagreeable, and may be easily disguised by some aromatic. Hypodermically given, it acts more decidedly and rapidly, and avoids the possibility of disturbing the stomach. It is unirritating. It may also be given per rectum.

5. It cannot cope with quinine as an antiperiodic or tonic, nor with salicylic acid in acute articular rheumatism.

6. It has practically no influence upon the pulse and respiration. If the pulse be dichrotic, the secondary wave entirely, or nearly, disappears. In other words, it raises the arterial tension.

In conclusion, he says that very little doubt is entertained but synthetic chemistry will develop many new compounds which may prove of avail at the bedside as antipyretics; but it is our firm conviction that at the present day antipyrin, in sufficiently large doses, is the most powerful, the most certain, and the safest antifebrile drug that we have in our materia medica.

CONTRIBUTION TO THE KNOWLEDGE OF ALBUMINATES IN MILK.

SEBELIEN describes in the *Zeitschrift für Phys. Chemie*, vol. ix. p. 444, two new albuminates of milk besides caseine, viz., lactoglobulin and lactoalbumen.

1. To obtain lactoglobulin, the milk is first carefully neutralized with soda lye, in case it be of an acid reaction, and then saturated with chloride of sodium. The filtrate on being warmed produces a flocculent precipitate, which consists principally of phosphate of lime; the filtrate of this, on being saturated with sulphate of magnesium, precipitates lactoglobulin. The percentage of lactoglobulin contained in milk is very small.

2. Lactoalbumen is obtained by adding one-fourth per cent. of acetic acid to the filtrate of milk, mixed with sulphate of magnesium. By solution in water, dialysis, precipitation of the remaining solution through alcohol, and washing with alcohol and ether, lactoalbumen can be obtained as a white powder, wholly soluble in water. Lactoalbumen

is by no means identical with serum albumen, and differs from caseine in containing a higher percentage of sulphur (the former having fourteen per cent., the latter seven per cent.), and a lesser percentage of phosphorus.

THE CIRCULATORY AND RESPIRATORY CHANGES IN ANIMALS PLACED IN THE PNEUMATIC CABINET.

The great objection to the use of the pneumatic cabinet has been that we have no knowledge of the physiological effect of rarefied and compressed air applied under these conditions on the respiration and circulation. These conditions have been investigated by PROF. H. N. MARTIN and DR. FRANK DONALDSON, who have published their results in the *New York Med. Journ.*, May 15, 1886. Their experiments were made on rabbits narcotized with chloral in whom the trachea was connected with a Marey's tambour, which recorded on the kymograph paper the rate and extent of breathing movements, while the arterial pressure and pulse were recorded at the same time. The authors have tabulated their results as follows:

I. When the animal is breathing air from outside the cabinet, rarefaction of air within the cabinet causes a marked fall of general arterial pressure, but has no influence on the pulse-rate. The fall of pressure lasts a short time only (ten to twenty seconds), and is followed often by a temporary rise above the normal.

II. This fall of systemic arterial pressure depends on two factors: greater flow of blood to the skin when the air around the animal is rarefied, and greater accumulation of blood in the lungs when they are distended.

III. Of these two factors, accumulation of blood in the lungs is the more effective; for, if the animal breathes air from the cabinet and not from outside, rarefaction of air within the cabinet (in this case accompanied by no special expansion of the thorax) has but a trivial effect in lowering arterial pressure.

IV. When the animal is breathing external air, rarefaction of the air within the cabinet usually has no effect upon the respiratory rate or the extent of individual respiratory acts, unless the fall of blood-pressure is considerable. If it is considerable, symptoms of anæmia of the medulla oblongata are seen. In most cases there is more forcible dyspnoëic breathing; in some there are dyspnoëic con-

vulsions similar to those which occur when an animal is bled to death, and due to the same cause, viz., deficient blood-flow to the respiratory centre.

V. The rapid recovery of general arterial pressure, while the animal is still in a rarefied atmosphere but breathing external air, is probably due to excitation of the vaso-motor centre, which, as is well known, is excited whenever its blood-supply is defective.

VI. The brain, inclosed in a rigid box, which is practically unaffected by variations in atmospheric pressure, has its circulation more disturbed in the pneumatic cabinet than any other organ except the lungs.

VII. Compression of the air within the cabinet, while the lungs are in communication with the exterior air, causes a considerable but transient rise of blood-pressure. This is probably mainly due to the forcing of blood from the cutaneous vessels; but the authors have not yet had opportunity to thoroughly investigate this point.

VIII. Compression of air within the cabinet, while the lungs are in communication with the exterior air, slows the pulse as the arterial pressure rises. This is probably due to excitation, by increased intra-cranial blood-pressure, of the cardio-inhibitory centre; but further experiments are necessary before this can be positively stated.

IX. In certain cases, when the air within the cabinet is rarefied and the animal is breathing external air, the respiratory movements cease altogether for several seconds. As to the cause of this physiological "apnœa" the authors are not yet ready to form an opinion. It may be due to the extra accumulation of air in the alveoli of the lungs, or to distention of the lungs exciting those fibres of the pneumogastric which tend to check inspiration.

Such, in brief, being the physiological effect of rarefied and compressed air as applied in the Ketchum cabinet, how should this knowledge affect the practical use of this apparatus? It having been found that even very great rarefaction of the air in the cabinet produces but slight effect on the circulation, provided the animal is breathing the air within the cabinet, Dr. Donaldson concludes:

1. That rarefaction of the air when the person first enters the cabinet (as directed by Mr. Ketchum), in order that the residual air may expand, and so drive out any plugs of mucus in the lungs, may be done without danger to the individual. In view of the great and sudden fall of arterial pressure when the ani-

mal is breathing outside air, and the air within is rarefied, he concludes:

2. That the air in the cabinet should never be suddenly rarefied, and that the motion of exhaust should invariably be slowly made, and the amount of rarefaction small, particularly at the first treatments. This sudden fall of arterial pressure depending as it does upon an increased blood-flow to the skin and an accumulation of blood in the distended veins and lung alveoli, he concludes:

3. That, before deciding a person to be a proper subject for treatment by pneumatic differentiation, *thorough examination* should be made of the *heart*; and that no person found to have pronounced insufficiency or stenosis of the mitral valve, or the slightest tricuspid regurgitation, should, under any condition, be placed in the pneumatic cabinet; for it is plain that rarefaction of the air would be most dangerous in such cases. The fall of arterial pressure would seem to depend chiefly upon the accumulation of blood in the lungs, for, if the animal breathes air from the cabinet and not from outside, rarefaction of air within the cabinet has but a trivial effect upon arterial pressure. From this fact he concludes:

4. That the liability to pulmonary hemorrhage is very slight, though greater perhaps than Dr. Williams has supposed. It having been proved that compression of the air within the cabinet, while the animal breathes external air, causes a considerable rise in arterial pressure, and slows the pulse from the increase of intra-cranial blood-pressure, he concludes:

5. That old persons, with possibly atheromatous arteries, are not, generally speaking, proper subjects for the pneumatic chamber, especially where their trouble is emphysema or asthma, and compression of the air within the cabinet is made use of in order to assist expiration.

Again, in view of the sudden and pronounced fall in arterial pressure following rarefaction, and of the considerable though transient rise of the same following compression of the air in the cabinet, he concludes that the method of differentiation should be practised with much care and discrimination in all cases, and that the actual movements of exhaust and compression should be made always very slowly and gently.

Finally, the Ketchum cabinet should be in the hands of careful auscultators only, for in those of the inexperienced or careless great harm may be done.

SYPHILIS AS A FACTOR IN EAR-DISEASE.

WOAKES believes that syphilis is a frequent cause of obstinate otorrhœa (*Centraibl. f. Med. Wissen.*, No. 1, 1886), and usually affects both ears. Caries is an almost permanent complication of syphilitic otorrhœa. Finding in several cases of otorrhœa with a syphilitic base that the cicatrices of leech-bites assume a copper hue, Woakes recommends the application of leeches for diagnostic purposes in doubtful cases.

The same author publishes a case in which he felt justified in diagnosing a gumma in the tympanic cavity. A man, 25 years of age, had acquired a chancre two years ago, and suffered for three months from hard hearing and tinnitus aurium. The tympanic membrane was found to be normal, but an opaque mass could be seen through it, which reached very near to its inner surface. Besides, there existed a catarrh of the Eustachian tube and the pharynx. The local treatment remaining without success, Woakes ordered inunctions of blue ointment nightly, and found the hard hearing and the mentioned opaque mass disappeared after two weeks.

THE ACTION OF KAKODYLIC ACID ON THE ANIMAL ECONOMY.

The only arsenic compounds in which the toxic properties of the arsenic are doubtful are the so-called arsenic methyl bodies or kakodylic compounds, and even as regards these there is much conflicting testimony. This is especially the case in regard to kakodylic acid, and therefore, as tending to clear up this matter, the experiments of Drs. JOHN MARSHALL and WALTER D. GREEN (*Amer. Chem. Journ.*, May, 1886) are particularly of interest. These authors quote a number of authorities, which seem to show that large doses of this substance may be introduced into the animal economy without producing the slightest symptoms of poisoning. On the other hand, Lebahn declares, from the results of his experiments, that kakodylic acid does possess poisonous properties, and that its toxic symptoms are like those of ordinary arsenical poisoning. Drs. Marshall and Green have repeated these experiments on one cat and three rabbits, using a preparation obtained from a Philadelphia manufacturer. In these experiments vomiting was produced, and considerable disturbance of the health, such as profuse salivation and urination, but in no case did a fatal result occur except in the case of one of the rabbits. In all the cases

the presence of kakodylic acid was determined in the urine, and the garlicky odor due to kakodylic compounds was strongly apparent upon the breath. In the fatal case the whole alimentary tract showed evidences of a severe gastro-enteritis, kakodylic acid was detected in the kidneys, but was not found in the brain. The purity of the substance was then tested, and it was found that it was contaminated with arsenious oxide. The results of the above experiments, therefore, naturally vitiated the value of any conclusions as to the action of kakodylic acid. Experiments were then begun with kakodylic acid obtained from Kahlbaum, of Berlin, which was found to be perfectly pure. This introduced into the stomach, in doses of $\frac{1}{2}$ gramme repeated several times, produced vomiting and diarrhœa, and evident inflammation of the alimentary tract. The garlicky odor was evident on the breath, and kakodylic acid was in every case found in the urine. In several other instances administration of various-sized doses of this substance produced the same symptoms of profuse salivation, staggering, weakness, vomiting, and diarrhœa, and in one case produced death. The authors' experiments therefore show that kakodylic acid produces symptoms analogous to those of arsenious oxide, though the results are not necessarily fatal. The action of the acid is the same, whether given by the mouth or injected directly into the circulation. The authors conclude, however, from their results that kakodylic is not a poisonous substance in the general acceptance of the word poison. The formula for kakodylic acid is $(\text{CH}_3)_2\text{As.O.O.H.}$, and it contains 54.35 per cent. of metallic arsenic, equal to 71.4 per cent. of arsenious oxide.

THE ETIOLOGY OF TRAUMATIC TETANUS.

DR. ROSENBACH, at the Congress der Deutschen Gesellschaft für Chirurgie zu Berlin, held at Berlin on April 7, 1886, made some very interesting remarks concerning the etiology of traumatic tetanus. We condense the report of the *Berliner Klinische Wochenschrift* of April 19, 1886, as follows: All efforts to artificially produce traumatic tetanus, or to transfer the affection from man to animal, or *vice versa*, and to thus prove its infectious character, have hitherto been fruitless. The inoculation of blood and pus of tetanic men into animals remained invariably without results; dogs especially appeared

wholly refractory to tetanus. Quite recently, however, Nicolaier found that in certain animals, such as rabbits, guinea-pigs, and mice, the inoculation of ordinary garden earth produced besides malignant œdema an actual tetanus. Almost simultaneously Rosenbach succeeded in transferring tetanus from man to animals. This observer took from a man affected with tetanus, resulting from frost-bites on the feet, a particle of nervous tissue from the neighborhood of the affected parts, and successfully transplanted the material to mice and guinea-pigs. Repeated experiments led also to the preparation of a pure culture, in which he demonstrated as the pathogenetic microbe of tetanus exactly the same minute bristle-like bacillus which Nicolaier had found in garden earth. It is fair to assume that this bacillus gives rise to the production of a poison similar to strychnine, which causes the general convulsions. At all events the infectious nature of tetanus can no longer be positively denied.

SALOL, OR SALICYLIC OF PHENOL.

This is a new antiseptic that has been discovered by PROFESSOR VON NENCKI, of Berne, Switzerland. It seems destined to take the place of salicylate of sodium, first of all in the treatment of rheumatism, and it may also succeed many of the other antiseptics. The unpleasant taste of the sodium salicylate is known in all hospitals, and it so frequently produces nausea followed by a fainting-fit that for many patients it soon becomes intolerable. The new body, salol, is a white body, slightly greasy to the touch, and having a slight aromatic odor, but no taste. It is almost insoluble in water, but soluble in alcohol.

M. Von Nencki first tried it on animals, and found that all the salol given with the food was found in the urine in the form of urate of salicyl: so that in the organism there was only a simple decomposition without any modification of the composing parts of the salol. Following up his experiments, M. Von Nencki found that it was the pancreatic juice that caused this transformation,—so that it was in the duodenum, and not in the stomach itself, that the decomposition took place; from which fact he explained the absence of nausea, etc., in the administration of the drug. From 6 to 8 grammes of it is now given per day. The urine of the patients becomes almost black, just as though they had taken

carbolic acid itself; but there are no bad consequences from this. Given in all the different rheumatismal affections, it has met with a greater success than the salicylate of sodium, reducing all fever much quicker than the sodium salt. It is also an antipyretic, and it has been tried in phthisis with a result of diminishing the temperature four degrees Centigrade (from 40° to 36°). It is advised to commence in these cases with small doses (0.50 centigramme). Salol would be indicated also in diabetes, as phenol is given. Again, it is given as a local antiseptic in all intestinal catarrhs, and, as Levachoff has demonstrated that salicyl dilutes bile, it may be given in typhoid fever to disinfect the ulcerations, and used also in cholera, and against all intestinal parasites. One of its important uses will most likely be in catarrhs of the bladder. Urine in which it was placed kept without decomposition for over six weeks, and in all cases the patient's urine became completely aseptic. Again, salol is almost insoluble, and its use as an antiseptic in place of iodoform has already given such results that we may be able to get rid of the last-named disagreeable substance and the dangerous corrosive sublimate. If salol does not kill the bacilli, it certainly prevents their development: so it is suitable more than any other known substance to powder wounds with.—*Philadelphia Medical Times*, May 15, 1886.

THE TREATMENT OF THE ROUND GASTRIC ULCER WITH ALBUMINATE OF IRON.

It is a well-known fact that the affection known as the round or perforating gastric ulcer occurs very frequently in girls and women of the chlorotic type, and that besides other anæmic conditions, especially those following upon a protracted lactation, predispose to the gastric ulcer. Etiologically very different opinions are held; while Virchow and Rokitanski emphasized the narrowness of the lumen of the vessels alongside of a premature fatty degeneration of the vascular walls, other observers accused the abnormal secretion of the gastric juice as the cause of the ulcer.

Still, however different the opinions may be regarding the exact causation of gastric ulceration, all pathologists agree as to the relation existing between the affection and anæmia or chlorosis. The reason that the gastric ulcer, in spite of its unquestioned relation to anæmia, is not treated by preparations of

iron, refers, of course, to the digestive disturbance which this class of medicines is pretty certain to create. Peters (*Blutarmuth und Bleichsucht*, p. 17, Leipzig, Weber), Neuss (*Zeitschrift für Klin. Med.*, 1881, vol. iii. No. 1), and other therapeutists have even published especial papers to prove that iron is positively contraindicated in gastric ulcer.

In view of the foregoing facts, we are rather surprised to find in an article appearing in the *Berl. Klin. Woch.* of April 12, 1886, iron advocated as an effectual remedy of gastric ulcer. The published observations were made by DR. TE GEMPT with the liquor ferri albuminati prepared by Dr. Drees, an apothecary of Bentheim (Hanover).^{*} This drug represents a salt in which the acid, as it were, has been substituted by albumen. It is of a neutral reaction, free from a metallic or astringent taste, well preservable, and highly resorbable.

Gempt had previously ascertained, in an experience of five years, that in chlorosis and anæmia the albuminate solution of iron was the most digestible and reliable of all preparations of iron. And, after having tried the remedy with success in the convalescence following upon gastric ulcer, he began to cautiously administer the drug also in such cases in which the gastric ulcer was still present. The dose used by our author was $\frac{1}{2}$ to 1 f3 given three times daily to adults, and 5 to 30 drops for children, always to be taken before meal-time. If a diluent be desirable, milk is the best vehicle. The absence of acidity in the drug precludes any injury to the teeth or the mucous membranes of the digestive tract. Hence, Gempt observed in no instance, even after an uninterrupted use of several months, gastric pains or digestive troubles resulting from the remedy.

It requires an especial mentioning that the drug appeared to exercise a direct influence upon hemorrhages from the stomach. The Carlsbad salt was found a useful adjuvant to the albuminate of iron. In conclusion, Gempt makes the important statement that, aside of numerous other affections, this preparation of iron has repeatedly proved a cure in the incipient stages of pulmonary phthisis, the so-called catarrhs of the apex.

If the albuminate of iron should in reality be found to be wholly exempt from the objectionable features of the rest of the preparations of iron, and at the same time to possess

their medicinal value, the field of practical usefulness of iron would be widely increased.

ARSENITE OF BROMINE IN DIABETES MELLITUS.

Following the advice of Dr. Austin Flint, Jr., DR. N. S. DAVIS, JR. (*Journ. of the Amer. Med. Assoc.*, May 8, 1886), has been testing the value of liq. brom. arsenitis, and reports that all the cases in which he has administered it have uniformly been improved. The treatment consisted in directions as regard diet, and the use of the arsenite of bromine in doses of 3 to 5 drops three times daily. Of course it is very doubtful as to whether the improvement in the cases reported by Dr. Davis was due to the medicine which was given or to the restrictions of the diet, since, as is well known, the latter alone, without any medication, will, in many cases, be sufficient to produce decided improvement. Dr. Davis gives the following summary as to restrictions in diet which are advisable :

ARTICLES OF FOOD FORBIDDEN.

Bread, cake, pastry of all kinds, and food prepared with flour, cracked wheat, oatmeal, rice.

Potatoes, turnips, beets, beans, corn, carrots.

Prunes, grapes, figs, bananas, pears, apples, preserved fruits.

Liquors of all kinds, whether distilled or fermented.

ARTICLES OF FOOD PERMITTED.

Soups, except those rich in vegetables, meat of all kinds, fish, egg, oysters.

Radishes, cucumbers, cresses, celery, lettuce, spinach, cauliflower, cabbage, tomatoes, oyster-plant, onions, string-beans, parsley, mushrooms, salads, pickles, olives, oil.

Lemons, gooseberries, currants, sparingly of raspberries, strawberries, oranges.

Milk, tea and coffee without sugar, but with glycerin in its place if desired.

More or less variation can be allowed from this in mild cases, and in severe cases more rigor may be required, although it is difficult to hold a patient to a diet more rigid than the above.

THE RADICAL CURE OF VARICOCELE.

To the large number of operations which have been devised for the cure of varicocele yet another has been added by M. RICHET, of the Hôtel Dieu. It is described, in the

^{*} Merk's liquor ferri albuminati differs from the above in being of an acid reaction, of an astringent taste, and in coagulating milk and chyle.

Revue de Chirurgie for April by M. Picqué, who is disposed to laud it. The vas deferens is first separated from the bundle of veins to be obliterated, and held out of the way by a thread of copper wire passed through the scrotum in an armed needle. The veins and the fold of scrotum over them are then grasped by the blades of forceps heated to a red heat, such as M. Richet uses for the destruction of hemorrhoids. A wound of some size is left, and cicatrization is obtained in about three weeks. M. Picqué argues that excision of the veins is the best of all the many operations for varicocele, but that it should only be undertaken by those who are quite familiar with the aseptic treatment of wounds. In cases where the surgeon is not confident of his ability to keep the wound aseptic, he recommends Richet's operation. We cannot join in such advice. Richet's operation appears, from the description given of it, to be a very rude method of obtaining a result more easily, more quickly, and better obtained by other means.—*Lancet*, May 8, 1886.

ON DISINFECTION BY HIGH TEMPERATURES.

In *Virchow's Archiv* (vol. cii. p. 81), WOLF publishes the results obtained with experiments in the use of heat as a disinfecting medium. He used milzbrand-spores (anthrax, splenic fever) dried up on silk threads and placed in mattresses, and observed the action of heat on these organisms. He found that even an influence of 140° C. applied for four and a half hours did not suffice to kill the microbes. Quite different results though were obtained by the application of vapor of water, obtained from Schimmel's or Bacon's stove. Wolf formulates his conclusions as follows: 1. For dry objects, watery vapor at the temperature of 100° C. is required for one to one and a half hours to obtain a thorough disinfection. 2. For wet objects, a vapor of 100° C. is required for two hours. 3. The temperature of the interior portions of the object must be at least 100° C. 4. Hot watery vapor of 100° C. possesses a higher disinfecting power than hot dry air of a much higher temperature. 5. The objects of disinfection must be destroyed, together with the micro-organisms. 6. The applicability of this method of disinfection, employed alone or in connection with dry air, is a very extensive one.

THE BULLOUS FORM OF IODIC ERUPTION.

From a careful study of the bullous form of eruption produced by the administration of iodine, DR. PRINCE A. MORROW draws the following conclusions (*Journ. of Cutaneous and Venereal Diseases*, May, 1886):

1. The bullous form of iodic eruption is comparatively infrequent.
2. It has for its seat of predilection the face, neck, forearms, and hands; exceptionally it may occur upon trunk and lower extremities.
3. There seems to be no definite relation between the amount of the drug ingested and the production of the eruptive accidents; they may follow, indifferently, a single insignificant dose, or may appear only after the long-continued use of large doses.
4. In the former case, the incidental effects of the drug upon the skin depend upon idiosyncrasy, in the latter class of cases the pathogenesis is more obscure.
5. The proneness of this eruption to develop in connection with cardiac and renal disorders would seem to indicate that these conditions stand in the relation of a determining cause, rather than a mere coincidence.
6. The practical inference may be drawn that caution should be observed in the administration of iodide of potassium when these complications are found to exist.

THE SURGICAL TREATMENT OF ECZEMA.

BOKHART advocates, in the *Centralblatt für Medicinische Wissenschaften*, 1886, No. 4, the following surgical treatment of circumscribed eczemata of long standing, especially when situated on the trunk or the extremities (except on the hands). The affected portion is to be anæstheticized with the ether spray after the patient has received an injection of morphine; then the part is to be deeply scarified by a double-edged bistoury, making cuts parallel to each other. The bleeding is stopped by compresses, and the part operated upon is rubbed with the officinal potash lye until the thickened epidermis begins to fall off. Then the potash lye is carefully washed off and the part dressed with Hebra's ointment or olive oil, to be replaced by a water dressing after twenty-four hours. After another twenty-four hours, the part operated upon appears like an extensive ulceration,—surface covered with many transplanted particles of skin. The healing process is now

to be favored by a dressing composed of pyrogallic acid or nitrate of silver, which is to be renewed every third day. This mode of treatment prevents relapses and all cicatrization save some few linear marks.

THE SURGERY OF THE PANCREAS.

A paper entitled "The Surgery of the Pancreas, as based upon Experiment and Clinical Researches," was read by DR. SENN at the recent meeting of the American Surgical Association (*New York Med. Journ.*, May 15, 1886), from which the following conclusions were drawn:

1. Restoration of the continuity of the pancreatic duct did not take place after complete section of the pancreas.
2. Complete extirpation of the pancreas was invariably followed by death, produced either by the traumatism or gangrene of the duodenum.
3. Partial excision of the pancreas for injury or disease was a feasible and justifiable surgical procedure.
4. Complete obstruction of the pancreatic duct, uncomplicated by pathological conditions of the parenchyma of the organ, never resulted in the formation of a cyst.
5. In simple obstruction of the pancreatic duct the pancreatic juice was removed by absorption.
6. Gradual atrophy of the pancreas from nutritive or degenerative changes of the secreting structure was not incompatible with health.
7. Physiological detachment of any portion of the pancreas was invariably followed by progressive degeneration of the glandular tissue.
8. Extravasation of pancreatic juice into the peritoneal cavity did not produce peritonitis.
9. Crushed or lacerated pancreatic tissue was removed by absorption, provided the site of operation remained aseptic.
10. Complete division of the pancreas by elastic constriction was never followed by restoration of interrupted anatomical continuities.
11. Limited detachment of the mesentery from the duodenum, as required in operations upon the pancreas, was not followed by gangrene of the bowel.
12. In all operations upon the head of the pancreas the physiological attachment of the peripheral portion of the gland should be maintained by preserving the integrity of the main pancreatic duct.
13. Partial excision of the splenic portion of the pancreas was indicated in cases of circumscribed abscess and malignant tumors in all cases where the pathological product could be removed completely without danger of compromising pancreatic digestion, or of inflicting additional injury upon important adjacent organs.
- 14.

Ligation of the pancreas at the point or points of section should precede extirpation as a prophylactic measure against troublesome hemorrhage and the extravasation of pancreatic juice into the peritoneal cavity.

15. The formation of an external pancreatic fistula by abdominal section was indicated in the treatment of cysts, abscess, gangrene, and hemorrhage of the pancreas due to local causes.
16. Abdominal section and lumbar drainage were indicated in cases of abscess or gangrene of the pancreas where it was found impossible to establish an anterior abdominal fistula.
17. Through-drainage was indicated in cases of abscess and gangrene of the pancreas, with diffuse burrowing of pus in the retro-peritoneal space.
18. Removal of an impacted pancreatic calculus in the duodenal extremity of the duct of Wirsung by taxis, or incision and extraction, should be practised in all cases where the common bile-duct was compressed or obstructed by the calculus, and death was threatened by cholæmia.
19. In such cases the principal source of danger, extravasation of bile into the peritoneal cavity, should be avoided by preliminary aspiration of the dilated bile-ducts, accurate closure of the visceral wound with fine silk sutures, and absolute physiological rest of the organs of digestion during the time required for the healing of the visceral wound.

COMMUNICATIONS FROM THE DIPHTHERIA WARDS OF THE CHARITÉ.

HENOCH's report on diphtheria, as observed in the wards of the Royal Charité at Berlin (*Charité Annalen*, vol. x. p. 490), embodies much interesting and valuable material.

Diphtheria increases, as appears from the publications of the bureau of statistics, yearly in Berlin, both regarding frequency and malignancy. The same observations could be made at the Charité. From the years 1876-1883 the number of diphtheria patients increased enormously, viz., from twenty-six to one hundred and eighty-three. About two-thirds of all cases belonged to the period between the second and sixth year of life. The mortality rate is most unfavorable in the first three years of life.

Of 319 cases observed, 208 died (an enormous percentage). It must be taken into consideration, however, that, aside from a grave epidemic nature and the naturally unfavorable conditions of a large old hospital, only genuine cases of diphtheria are included in the above statement.

Of the 319 cases, 174 took their course without exceeding the region of the pharynx; of these, 95 were cured and 79 died. This great number of cases with a lethal exit, which did not terminate under symptoms of croup, confirm the frequently-noted fact that the very gravest septic forms of diphtheria show no tendency to extend downward, not even when they attain a duration of seven days and more. One hundred and forty-five cases assumed a croupous nature, and were all operated upon with the exception of 7 cases. These 7 patients perished, while of the 138 operations only 16 (about eleven and a half per cent.) were successful. These figures show that in spite of all dangers which lie in the diphtheritic infection itself, the termination in croup slays the greatest number of victims. Henoch regards the combination of grave septic symptoms with those of croup as the only tenable contraindication to the operation of tracheotomy. Among the causes of death after tracheotomy we find, besides affections of the respiratory organs mentioned, diphtheritic collapse, erysipelas, and (in three instances) convulsions appearing twelve to forty-eight hours after the operation; for these no valid reason could be assigned even after the autopsy. Otitis media was observed only in three cases; rhinitis diphtheritica, however, in very many instances, even in those which terminated in a cure.

The conjunctiva palpebrarum was but rarely, and only in grave cases, affected. Erythemata occurred in three cases, scarlet fever in many, nephritis in some. When in presence of nephritis symptoms of cardiac weakness set in, injections of camphor, ether, and strychnine were employed, to which, in some instances, Henoch attributed the recovery. In diphtheritic paralysis hypodermic injections of 1 to 4 mg. of strychnine constituted Henoch's routine treatment. Of prolonged diphtheritis Henoch noted also a few cases, one of which lasted over two months up to its recovery.

In conclusion, Henoch declines to admit that any of the vaunted specific measures can be regarded as reliable.

PIPERONAL.

This is an aldehyde, corresponding to piperonic acid, obtained as a product in the oxidation of piperina. It occurs in the form of small, white, prismatic scales, possessing a strong odor resembling that of vanilla. A small quantity placed upon the tongue produces a sensation analogous to, but more per-

sistent than, that caused by mint, and it is more irritating to the mucous surfaces than is the latter. It melts at about 125° F., and at a higher temperature volatilizes without leaving any residue. When ignited, the flame and smoke resemble the appearance of burning camphor. It is insoluble in cold water, but in hot water it melts, and looks like drops of oil; it dissolves readily in alcohol and ether. DR. RICCARDO FRIGNANI has made a number of experiments with this substance (*Giornale Internazionale delle Scienze Mediche*, No. 2, 1886), as a result of which he states that it possesses both antipyretic and antiseptic properties. The antipyretic action is not of the most active or energetic kind, yet is sufficient in many cases. It is best given in 15-grain doses, repeated every two hours for three or four times a day, but much larger and more frequent doses are well borne. The most noteworthy disagreeable effects are nausea, eructations, and dryness of the throat. Its antiseptic action, however, the author states, is much more marked, and, since it is innocuous to the system, even when given in doses of $\frac{1}{2}$ to 1 drachm, he believes that it is deserving of a high rank among drugs of this class.—*New York Med. Rec.*, May 15, 1886.

WHICH FOOD-STUFFS ARE DIGESTED MOST EASILY BY THE STOMACH?

To solve the important problem embodied by this heading, BIKFALVI instituted at the Physiological Institute of Klausenburg numerous experiments on dogs by means of artificial digestion. We find the main results of these researches quoted in the *Centralblatt für Med. Wiss.* of February, 1886.

The gelatinous substances, especially the constituents of tendons, appeared to be digested in far greater quantities than pure albumen and organic matters rich in albumen. The experiments on dogs gave the following results. These were digested in two hours:

1. Of raw caseine.....	25	per cent.
2. Of boiled egg.....	41	"
3. Of raw ligam. nuchæ.....	49.5	"
4. Of raw liver.....	52.5	"
5. Of raw kidney.....	55.33	"
6. Of boiled beef.....	58	"
7. Of raw unstripped muscular tissue..	68.5	"
8. Of raw beef.....	79.5	"
9. Of raw hyaline cartilage.....	81	"
10. Of raw fibrin.....	97.5	"
11. Of raw lung.....	99.5	"
12. Of raw tendon.....	95.5	"

The experimenter concluded that the gas-

tric juice of carnivorous animals digests principally the gelatinous substances, and that the digestion of albumen falls chiefly to the action of the pancreatic gland.

*THE TREATMENT OF IRREDUCIBLE
INGUINAL HERNIA BY ELASTIC
PRESSURE.*

MR. WM. ELDER reports in the *Brit. Med. Journ.*, May 8, 1886, a case of a man in whom an irreducible inguinal hernia was treated by pads of cotton wool and an elastic bandage, with the result of entirely overcoming the hernia. The case was of a man, aged 56, who had had a small hernia for more than thirty years. He had never worn a truss, or used any means to prevent the hernia from coming down. Recently the difficulty in reducing it had greatly increased, and the tumor had become much enlarged, and finally it became irreducible. The swelling was found to consist chiefly of bowel and omentum, the latter being so much indurated that it felt wherever it was touched as hard as a stone. There was no pain upon pressure, and on palpating the tumor a sort of a gritting sensation was felt as if there was fluid in the sac. The bowel could be reduced, but very little difference could be made in the omentum; reduction under chloroform also failed, and elastic pressure was then applied by means of a padding of salicylic wool and an elastic bandage in the form of a single spica. On removing the pad the next day the hernia was found to be much reduced in size and all the crepitating sensation was gone. The bandage was now kept on for nearly three weeks, resulting in the entire cure of the hernia, which now is entirely reduced, and is readily retained by a truss. Two points appear worthy of notice in this case: first, the efficacy of the elastic pressure in the treatment of irreducible hernia; and second, the method of applying the pressure. The first of these is self-evident, viz., that continued elastic pressure carefully applied must reduce an indurated hernia in size, and by reducing its size must make it more easy to reduce. Secondly, as to the means of applying the pressure. At first the bandage was applied as a single spica in the case above alluded to of Mr. Elder, but it was found that the swelling was more apt to make its way out below the bandage by passing towards the middle line. The bandage was then applied more in the form of a double spica. Mr. Elder began the bandage at the right anterior and superior iliac spine, crossed the abdomen to

below the left trochanter major, then round the thigh and across the perineum to the right groin and right anterior superior iliac spine, where it was pinned to the beginning of the bandage. Then it was wound round the back, above the iliac crests, to keep it from slipping down. He then brought it down over the hernia, on the left side, across the perineum, and round the right thigh, over the front of the abdomen to above the left iliac crest, and round the back to the right anterior superior iliac spine, where the bandage began. He then went on as before, following the same course, but making the bandage above slightly overlap the one below, until he got all the pubic region covered, except a small space in the middle line for the penis. This opening, which always weakens the pressure, must not be too large, otherwise the hernia will tend to escape through it. This bandage had only been once on when the hernia disappeared.

Another point is, that enough wadding must be used in order that, when the bandage is on, it may not pain the patient, and in order that the pressure may be equal all round the hernia. It is not necessary to put the bandage on very tightly, as it gradually becomes tighter the longer it is kept on. The different layers of bandage must be pinned to each other, to prevent them from slipping out of their place.

ON REVACCINATION.

In an essay on the revaccination of young individuals, published by DR. JULES BESNIER in the *Revue Mensuelle des Maladies de l'Enfance* (February, 1886), this author establishes the following conclusions:

1. The number of successful revaccinations in young subjects revaccinated for the first time increases with the advancing years, and reaches its maximum at the period of fifteen to twenty years. In adults revaccinations are less frequently successful than in young subjects.

2. Certain diseases favor a successful revaccination at certain periods of life: among these are the affections of the typhoid type. The ordinary eruptive fevers of childhood and the chronic affections of old age have no such influence.

3. In the subjects vaccinated at birth and not revaccinated the predisposition for variola and vaccinia reaches its maximum in the ages of fifteen to twenty, and decreases gradually as age advances.

4. This fact is a stringent reason for the

revaccination of all persons at the stated ages of adolescence.

5. Bovine lymph is, by all means, preferable to human lymph.

6. In absence of an epidemic of variola, the months of March and April (Easter holidays) are most suitable for revaccination of school-children.

PAPAIN.

The *Carica papaya* (papain-tree) has a wide tropical distribution. Its fruit (*Birmingham Med. Review*, May, 1886) resembles a muskmelon in look and structure; it has a strong pungent flavor, and is much relished by children; it is collected in the green state, for, if allowed to ripen on the tree, it becomes bitter. On incising this fruit, a milky juice plentifully exudes, especially if the fruit be in the young green state. This juice may also be scantily obtained from the leaves and young branches.

Papain, or papayotin, is the name given indiscriminately to the milky juice, the dried juice (which resembles gum arabic in appearance), and to the ferment-containing powder obtained from this latter by extraction with alcohol. The following notes refer to this powder. Papain can be got in any quantity, and is easy of extraction. Its composition, according to Wurtz, is variable. Several analyses gave him this result: C=46 to 53, N=14 to 18, H=6 to 7, S=2 to 2½, and Ash=4 to 10.

Wurtz and Bouchut found a butyric ferment in all their samples, but were able to preserve it then in glycerin. It dissolves in less than its own weight of water. A concentrated aqueous solution clouds slightly on boiling, but does not coagulate as does albumen; if left to itself for a few days a similar cloud appears, and the fluid is then seen to be full of vibrios and rods. If pure, it gives no precipitate with corrosive sublimate, basic acetate of lead, nor on boiling. This behavior distinguishes it from peptones and albumens. With nitric and hydrochloric acids a large precipitate occurs, which is readily soluble in excess; phosphoric and acetic acids do not precipitate it; picric acid does so, and the precipitate is not soluble in excess. The powder is white and amorphous, and its aqueous solution has a slightly bitter taste. The actual ferment has not been isolated.

Physiological Action.—This is due to the contained ferment, which digests not only muscular fibre but also connective tissue (Brunton).

Wurtz and Bouchut obtained the following results: 1. 1½ grs. in a neutral aqueous solution dissolved 132 out of 155 grs. of moist fibrin in ten hours at 40° C.; there was no swelling of the fibrin previous to its solution. 2. 1½ grs. in a slightly alkaline aqueous solution dissolved 155 grs. of moist fibrin in ten hours at 40° C., except a small residue of dyspeptone; but the filtrate gave a precipitate with acetic and nitric acids, and a cloud appeared on boiling; there was no swelling of the fibrin previous to its solution. 3. 2¼ grs. in a solution acidulated with .2 per cent. HCl made 150 grs. of moist fibrin fluid in fifteen minutes, and dissolved 123 grs. of it in two hours, leaving 27 grs. of finely-divided dyspeptone in suspension; but the filtrate gave a precipitate with nitric acid. Thus papain differs from pepsin in its action on proteids in "dissolving them, not only in the presence of a little acid, but even in neutral or alkaline solutions."

Brunton and Wyatt deny that papain has any digestive action in an acid solution. Martin found that with .05, .1, and .2 per cent. HCl no digestion took place, for though the solid residue showed slight loss of weight, the filtrates gave the reactions, not of peptones, but of soluble proteids. Saundby found its action enfeebled but not prevented in an acid solution. Lastly, Albrecht declares that hydrochloric acid hastens its action, and states that the officinal preparation in use in Paris hospitals is an acid one. As to its action in an alkaline medium, Saundby says this also causes enfeeblement, but Martin found that in a .25 per cent. solution of sodium carbonate its action was as powerful, if not more so, than in a neutral medium, but that when the alkalinity was raised to .5 or 1 per cent., a weakened action resulted. Rossbach states that its action was stronger at 15° to 20° C. than at 35° to 40° C., while Martin's experience points to the reverse of this.

If we want to complete the conversion of the fibrin into pure peptone, so that nitric acid shall produce no precipitate in the filtrate, the proportion of papain to moist fibrin must be as great as three per cent., and the digestion must take place for forty-eight hours at 50° C. The action of the ferment is in no way affected by the rapidly appearing bacteria, for Wurtz showed that when the production of these was prevented by carbolic acid, fibrin was digested as well as ever. Its action on albuminoids resembles that of trypsin more than pepsin. Its first action is one of erosion, and no swelling takes place, while

leucin, and probably tyrosin (Martin), are among the products of digestion. It produces an intermediate product, apparently a globulin; but this seems to resist the change into an alkali-albumen, for no precipitation occurs on neutralizing the alkaline filtrate, only on acidifying this. Milk is first coagulated by it and then precipitated, casein digested afterwards. Its action is more powerful than pepsin and weaker than that of trypsin. Injection into the veins of a rabbit of a small quantity stopped respiration in fifty minutes (Dowdeswell).

Therapeutic Action.—The dose of the powder is 5 to 10 grains. It appears to be useful in dyspepsia and gastric catarrh (Brunton), especially one would think in those cases where the mucous membrane is thickly coated. In solution it rapidly dissolves the false membrane of croup, hence in diphtheria the pharynx should be painted with it every five minutes. It has also been used to remove warts, the thickening caused by chronic eczema, and the hypertrophied condition of the palms of the hands. It should be similarly useful in old psoriasis. Some years ago, Mr. Malcolm Morris successfully used it at St. Mary's to remove tubercles of irritation from the hands of the mortuary porter. It painlessly dissolved them away, and its occasional application kept his hands smooth so long as he avoided dead matter. Mr. Cox says it is the remedy *par excellence* in the later stages of "capped elbow" in the horse, when pus or serum has been poured out; that its injection is then much more potent than that of tincture of iodine. Mr. Cox, too, found it a valuable injection into old sinuses. He believes it destroys ("digests") their walls, setting up healthy granulation in their place, which rapidly leads to the complete obliteration of the sinus. This is in the horse, but there seems no reason why it should not be similarly useful in the human subject in cases of chronic bursitis, chronic synovitis, old recurrent hydrocele, etc. It might prove effectual, too, in all those cases where a pyogenic membrane has been produced,—e.g., in a discharging psoas or other chronic abscess, as an injection into the foetid cavities of bronchiectasis, to close up the remains of an old empyema, or to set up healthy action in a case of chronic pleural effusion after removal of the fluid. In the troublesome sinuous tracts which sometimes form the remains of mammary abscess it should prove a valuable injection. Mr. Cox has loosened the attachment of a fibrous tumor in the neck of a horse

by passing a seton through it and keeping the thread soaked in papain juice. It has been recommended to destroy epithelioma. Its action has the great advantages of being painless and unirritating; it is no caustic, nor astringent, nor counter-irritant, but dissolves away the diseased tissues, so giving the underlying structures a chance of showing their healthiness.

ON MILK DIGESTION.

REICHMANN (*Archiv für Klinische Medizin*, vol. ix. No. 6) has made some valuable researches on the digestion of milk, which we publish here in condensed form. The milk drank by a healthy young man 20 years of age was subjected to an examination in the various stages of its digestion, and tested for acids, peptones, and parapeptones. Reichmann came to the following conclusions:

1. Three hundred c.c. of raw milk leave the stomach four hours after its ingestion.
2. The actual process of its digestion lasts but three hours.
3. The coagulation of milk takes place five minutes after its ingestion.
4. This coagulation is not caused by an increase in the quantity of acidity, but by the influence of another agent, probably Hammersten's ferment.
5. The maximum of acidity, viz., 0.34 per cent., occurred in all experiments but twice, once after the lapse of forty-five minutes, and the second time after one hour and fifteen minutes.
6. The contents of the stomach attain the maximum of its middle acidity, viz., 0.32 per cent., in one hour and fifteen minutes.
7. The acidity of the contents of the stomach depends at first solely upon lactic acid, later upon lactic acid and muriatic acid together.
8. Muriatic acid presents itself in larger quantities after the lapse of forty-five minutes.
9. The acidity of the gastric contents increases gradually during the first hour and fifteen minutes, and then gradually decreases until the milk has wholly left the stomach.
10. The maximum quantity of peptone occurs at the period between thirty minutes and two hours after the ingestion of milk. Before and after this period peptone occurs only in traces. Para-peptone shows in the beginning of the process of digestion the opposite behavior.

Experiments made on the same individual

with boiled milk led Reichmann to the following conclusions :

1. After the ingestion of 300 c.c. of boiled milk the sour contents leave the stomach in three hours.
2. The actual duration of this digestion lasts two hours and thirty minutes.
3. As to the nature of the acids in the gastric contents, the degree of acidity and its variations, no appreciable differences could be ascertained between the behavior of raw and of boiled milk.
4. In the digestion of boiled milk a more energetic peptonization occurs sooner than in the digestion of raw milk.
5. The caseine clots are much smaller in boiled than in raw milk.
6. The duration of digestion is shorter and the disappearance of the sour contents from the stomach occurs sooner in boiled than in raw milk.
7. After the ingestion of 100 c.c. of boiled milk the sour contents leave the stomach in two hours.
8. The duration of its actual digestion is only forty-five minutes.
9. After the ingestion of 25 c.c. of boiled milk the sour contents leave the stomach in two hours.
10. The duration of digestion of 25 c.c. of boiled milk is only forty-five minutes.
11. After the ingestion of smaller quantities of milk, muriatic acid can be found much sooner in the stomach with the aid of ordinary reactions.

Finally, Reichmann experimented also with alkalized milk in order to study the action of alkalies on the digestion of milk. All results obtained on the young man experimented upon were later confirmed by researches on nine other healthy persons.

THE ACTION OF BICHROMATE OF POTASSIUM.

DR. ALFRED DRYSDALE publishes in the *Med. Press*, April 21 and 28, 1886, an elaborate paper on the sphere of action of bichromate of potassium. When given to animals, 10 grains injected into the jugular vein is capable of producing rapid death in a dog, death being preceded by spasms and retching, followed by motor paralysis. At first the blood-pressure rises, but in a minute or two begins to fall, and continues to do so until death, the slowing of the pulse evidently being due to stimulation of the inhibitory fibres of the vagus. Post-mortem examination shows con-

gestion throughout the large and small intestine, with the membrane reddened or perhaps inflamed. When the drug is given internally in poisonous doses it acts as a violent irritant, produces incessant vomiting and purging of mucus and blood, quick pulse, salivation, rapid emaciation, great weakness, and death within a period of twelve hours to three weeks, sometimes preceded by convulsions. On post-mortem examination, ulcers are found on the mouth and tongue; the mucous membrane of the entire alimentary canal is more or less destroyed, with extensive superficial ulcerations, especially in the stomach. The kidneys are always severely congested. In workmen engaged in the manufactory of this salt very serious symptoms may also be produced. In many of the workers the septum of the nose will have been destroyed by ulceration. In fact, this perforation and destruction of the septum is as characteristic of chrome-workers' disease as is necrosis of the jaw of phosphorus-match makers. The eyes are frequently inflamed, and the alimentary canal disturbed in its functions, while the skin is the seat of a papular eruption, which becomes pustular, and which leaves small dry ulcers, healing with a depressed cicatrix. Used as a remedy, bichromate of potassium may be reasonably hoped to modify pathological processes in tissues which are specifically acted on by the drug, such as the respiratory passages and alimentary canal, the liver, kidneys, skin, and bones. It therefore has been used, and with a certain amount of success, in scrofulous eczema, farcy, and digestive disorders, marasmus, and syphilis. Polypi of the nose, after repeated removal with the forceps, will often yield to the topical application of a snuff composed of 9 parts of sugar of milk to 1 of powdered bichromate of potassium. It also promises success in the treatment of hay asthma, and as a gargle, 2 grains to the ounce of water, with $\frac{1}{2}$ ounce of glycerin, in acute ulcerated sore throat, as well as in cases of indolent enlargement of the tonsils. When given internally, as in the treatment of certain forms of dyspepsia and chronic intestinal catarrh and in syphilis, the dose should not be more than a $\frac{1}{4}$ grain daily, though sometimes $\frac{1}{2}$ grain will be sufficient to produce violent emesis.

THE RELATIONS BETWEEN CARDIAC RHYTHM AND BLOOD-PRESSURE.

To ascertain the precise relations existing between the rhythm of the ventricular con-

tractions and the blood-pressure, PROF. BOTKIN, of St. Petersburg, experimented on the frog's ventricle and communicated the obtained results to the *Centralbl. f. Med. Wiss.* (No. 4, 1886). Omitting the purely technical portions of Botkin's communication, we condense his principal conclusions as follows :

1. Twenty-five, forty-five, or sixty minutes pass before the apex—cut out and nourished after the Leipsic method by defibrinated rabbit's blood and two parts of a 0.7 per cent. solution of chloride of sodium—attains a constant working power. If the latter has once been reached, it continues for an hour or more.

2. The variations in the quantity of blood expelled at each ventricular contraction are approximately proportional to the variations in the cardiac rhythm.

3. The power of the cardiac muscle decreases with the acceleration of the rhythm, and increases with the slowing of the latter.

4. An inverse relation appears to exist between the variations in the rhythm of the contractions and the variations in the power of the heart-muscle.

EFFECT OF BITTERS ON DIGESTION.

DR. CHELTSOFF, chief of Professor Botkin's clinic, thinks that extracts of the so-called "pure bitters," which are usually prescribed with the view of stimulating the secretion of gastric juice and of aiding digestion, so far from having any beneficial effect of that kind, are absolutely injurious, inasmuch as they retard the digestive functions. He has made a series of experiments with extracts of aurantium, gentian, trifolium, absinthium, calumba, cascarilla, and quassia on (1) gastric digestion and the secretion of gastric juice; (2) pancreatic digestion and the secretion of pancreatic juice; (3) the secretion of bile; (4) fermentation; and (5) nitrogenous metamorphosis. The conclusions at which he arrived were that bitter extracts, even in small doses, interfere with artificial gastric digestion, and also with the gastric digestion of animals, but not to so great an extent. Large doses of bitter extracts diminish the secretion of gastric juice, though small doses effect a slight and transitory increase of it, the digestive power of the fluid being, however, in all cases diminished. Bitter extracts have no effect on the secretion of pancreatic fluid, but they nevertheless retard hypogastric digestion. The action of bitter extracts on the secretion of bile is various; extract of absinthium, extract

of trifolium, and large doses of extract of cetrarin slightly increase it, usually at least, but not invariably; while extract of quassia, extract of calumba, and small doses of extract of cetrarin have no effect at all. Bitter extracts have no antifermentative effect, and do not hinder suppuration. Lastly, assimilation of nitrogenous substances is diminished by the use of these extracts.—*Lancet*, May 15, 1886.

TESTING THE DISINFECTING POWER OF COCAINE, CORROSIVE SUBLIMATE, AND CHLORINE-WATER.

In the *Archiv für Augenheilkunde* (vol. xv. p. 295) we find a *résumé* of SCHMIDT-RIMPLER's researches on the comparative disinfectant value of cocaine, corrosive sublimate, and chlorine-water. The experimenter brought the mentioned drugs in contact with the secretions of the lachrymal sac, and then inoculated them into the cornea of forty-eight rabbits.

Using a four per cent. solution of muriate and salicylate of cocaine, he did not note any reduction of the infectious properties of the secretion if the latter had remained for one to three minutes in the solutions. Only after a prolonged contact with the solutions the secretion appeared to have lost some of its infectious nature. This result, however, does not justify the conclusion that cocaine is a disinfectant, properly speaking.

As to the sublimate solution (1 to 5000), the observer found that a short contact of the secretion with the solution did not suffice to remove its capacity of infection; in five to ten minutes, however, this effect could be obtained with certainty.

The chlorine-water showed the promptest effects, and is superior even to the sublimate. Hence, for ophthalmological purposes at least, this drug is to be regarded as the best disinfectant.

SOME READILY AVAILABLE TESTS FOR THE IMPURITIES IN WATER.

The most valuable tests for determining the impurities in drinking-water require, as a rule, an amount of apparatus and practice that places them beyond the reach of the practising physician. The estimation of organic carbon and nitrogen, of free and albuminoid ammonia of nitrogen, as nitrates and nitrites, are illustrations of this fact. The presence of nitrites and chlorides is frequently significant of the impurity of water. The nitrogen of organic bodies is converted

in the process of decay into ammonia, and exposed to oxidizing agencies is resolved into nitrous and nitric acids, which combine with bases to form nitrites and nitrates. The former are of especial interest, as a water pure enough for drinking purposes, and not containing more than 1 to 1000 part per 100,000 of nitrous acid, and the presence of three or four times this quantity is sufficient to condemn a water. MR. C. C. HOWARD publishes in the *Sanitarian*, May, 1886, a ready method of determining the presence of nitrous acid in water. The agents which he has found to act most satisfactorily are sulphuric acid and naphthylamine hydrochloride. If water containing not more than 1000 part per 100,000 of nitrous acid be treated with a drop of hydrochloric acid and a drop each of solutions of these reagents, after standing ten or fifteen minutes only the faintest tint of pink will be perceived. If a marked pink be produced, the quantity of nitrites is sufficient to indicate serious contamination. In sewage, and in the water from a few wells, the color was of a deep carmine, and the quantity present 20 to 66 times the limit stated.

Another constituent of importance is chlorine combined with sodium, as sodium chloride or common salt. Since this is found in the fluids of the body, and urine contains 500 parts per 100,000 of chlorine, mixtures of animal excreta with water will increase the quantity of chlorine found therein. Two or three wells have been found in Columbus, Ohio, containing less than 2 parts per 100,000 of chlorine, but the majority contain from 5 to 20 parts per 100,000, while one well in an adjoining town contained more than 50 parts.

The reagents for chlorides are nitric acid and silver nitrate, which produce in water containing chlorides a white precipitate of silver chloride. In water containing 1 or 2 parts of chlorine per 100,000, the precipitate is so slight that it appears as an opalescence, while with 10 or 20 parts a precipitate is produced. The appearance of a marked precipitate indicates the presence of a sufficient quantity of chlorides to justify the rejection of the water.

ON THE INFLUENCE OF FOOD ON ANIMAL TEMPERATURE.

PROF. HERING, in Kiew, has studied in detail the question of the influence of ingestion of food on the variations of animal temperature, and has come to some very interesting results, which we find published in the *Centralblatt für Med. Wiss.* (No. 4, 1886). The

observations were made on a man in whom the operation of gastrotomy had been performed on account of cesophageal stenosis.

Hering found a fall in the animal temperature after each meal, and observed that the extent of this fall depended upon the difference in temperature between the ingested food and the stomach.

Ingestion of food and muscular action play, in Hering's estimation, a more important rôle regarding the daily variations of temperature than Liebermeister and other German observers have assumed. Our experimenter found that after the ingestion of hot food the pulse became quicker and soft, respiration more hurried and superficial, and that the temperature fell in the rectum, but rose in the axilla.

On the contrary, after the ingestion of cold food the pulse became slower and hard, respiration slackened, and the temperature fell both in the rectum and the axilla. Vintchgau regards these phenomena as the results of the peptonization of ingested albuminates and the subsequently-produced latent heat, while our observer attributes them to a nervous influence. In his estimation the ingestion of cold food produces a constriction of the blood-vessels as the result of vaso-motoric irritation; in this manner an increase of the arterial pressure is caused, which directs the blood-current from the intestinal tract toward the periphery. Thus the hard pulse and the sinking of the temperature in the stomach find a rational explanation.

The ingestion of cold food, on the contrary, leads to a general paralysis of the vaso-motor nerves, and an afflux of blood to the intestinal tract, while the heart increases its working power in order to retain its influence over the circulation at the usual height.

Alongside of these factors certain other influences require to be considered in the variations of temperature; among these are the periodical ingestion of food, various somatic and psychical actions of the organism, and, finally, time itself, for during the night the temperature is invariably lower than during the day.

SANTONATE OF ATROPINE.

Santonate of atropine, a compound of atropine and santonic acid, is recommended by BOMBELLON (*Pharm. Journ. and Trans.*, May 1, 1886) as presenting advantages over any other salt of atropine for ophthalmic purposes, a solution of it being perfectly non-irritating and not liable to fungoid growth. The action

is said to be mild and to resemble that of hom-atropine; the mydriatic action equals that of atropine sulphate; 1 drop of its solution of 1 centigramme in 20 grammes of water is sufficient to dilate the pupils, the dilatation disappearing in from twelve to twenty-four hours. Santonate of atropine is described as a white, amorphous, non-hygroscopic powder. A dilute solution may be prepared with cold water; a stronger solution requires the aid of a little heat. The solution should be kept in yellow glass bottles to avoid the formation of photosantonin acid under the influence of light, though it is not yet known whether this change would be prejudicial.

THE TREATMENT OF HYSTERIA AND NEURASTHENIA.

Therapeutic suggestions coming from America are so invariably received with indifference, or even obstinate opposition, by our German colleagues, that it is gratifying to find in the German medical press the praise of a certain system of treatment as established by an American therapist.

In the *Berliner Klinische Wochenschrift* of April 19, 1886, Dr. BURKART, of Bonn, publishes the results of twenty-one trials with Weir Mitchell's method of treating hysteria and neurasthenia. In a previous paper, which appeared in Volkmann's *Sammlung Klinische Vorträge* (No. 245), this author had first directed the attention of the German profession to the Mitchell treatment of various forms of nervous ataxia and mal-nutrition.

The so-called Weir-Mitchell cure consists, it will be recalled, principally in massage (and faradization) of the muscular system of the body, an enormous supply of readily digestible food, and strict isolation, with rest in bed.

Of the twenty-one cases treated by Burkart (four male and seventeen female patients), nine were little or not at all benefited, while twelve could be discharged as completely cured. Considering that all of these patients had for years suffered from the gravest forms of hysteria and neurasthenia, and that all known remedial resources had previously been tried in vain, the obtained percentage of cures—fifty-seven per cent.—must be regarded as very acceptable.

Burkart gives certain suggestions of practical utility in the Weir-Mitchell cure which will interest those intending to try this treatment at a given opportunity.

In every instance that the Mitchell cure is to be exhibited, Burkart deems it necessary to

carefully consider whether the patient is able to bear with impunity the single requisites of the treatment, as stated above. It is certain, at least, that numerous patients of the neurasthenic type would probably be injured by a rigid execution of this treatment.

Success can, in Burkart's opinion, be looked for only in such patients as are endowed with a considerable energy of will and have firmly determined to assist the physician with their greatest efforts, especially in the direction of nutrition. The patients are, besides, to understand clearly what is intended and what is wanted of them.

In our author's experience, patients in whom a pronounced irritability of the cerebrum existed remained wholly indifferent to the Mitchell treatment. Especially in the case of female patients the required strict isolation will—as Leyden, in a discussion of Mitchell's treatment, had previously pointed out—very often be an injudicious attempt on account of the nervous excitation resulting from it. If the cerebral irritability coexists with or depends upon an existing anæmia, the outlook is more hopeful. In visceral neuralgia Burkart's success was likewise limited: the local pains usually remained, though less pronounced, after all other morbid symptoms had disappeared.

Burkart tried the Mitchell cure also in four instances of sexual neurasthenia,—resulting from a preceding urethral affection or venereal excesses,—but, as could be presumed, with unsatisfactory results; in one instance only was an improvement observed.

The Mitchell cure, exhibited under the precaution of strict individualization, deserves, in Burkart's opinion, the reputation it enjoys in America, and is well worthy of further trials.

LIGATURE OF THE LARGER ARTERIES IN THEIR CONTINUITY.

At a recent meeting of the Royal Medical and Chirurgical Society (*Lancet*, May 15, 1886), Mr. BALLANCE and Mr. W. EDMUNDS communicated the results of an experimental inquiry on the ligature of the larger arteries in their continuity. The experiments were made by the permission of Prof. Birch-Hirschfeld at Leipsic. The object of the paper was to show that in the ligature of a large artery in its continuity (1) it was neither necessary nor advisable to tie the ligature so tightly as to rupture the coats of the vessel; (2) the lumen of the vessel must be completely or almost completely obliterated; (3) the round ligature,

of small size and possessed of certain qualities, was the best. The authors commenced with a short historical sketch. They then stated the reasons which led them to perform the experiments which formed the basis of the paper. Nineteen carotid arteries of sheep and horses were ligatured, some with catgut and others with kangaroo tendon, and the result in each case was given. The animals were killed and the vessels removed from nine hours to seventy-three days after ligation. The general results of the operations were summarized, and the best material for ligation and the function of the clot discussed. Certain objections which might be raised were considered, and, in conclusion, the authors recommended for the operation of ligation in continuity (1) aseptic precautions; (2) the small round absorbable ligature; (3) the maintenance of the integrity of the arterial wall. The paper was illustrated by macroscopic and microscopic preparations, and by drawings. It was seen in the preparations that the inner coats, even where included in the ligature, were alive and apparently of unimpaired vitality; that, although the tunics were unruptured, a plastic effusion had taken place, which in the arteries removed latest was developing into connective tissue, permanently occluding the vessel. With respect to the ligatures, leucocytes were thrown out round them, and gradually caused their absorption. In the case of kangaroo tendon, the absorption took place only from the surface; but with catgut the leucocytes insinuated themselves along the crevices formed by the twisting of the gut, and the ligature became absorbed more rapidly. The durability of catgut seemed to vary in different specimens; but it was thought that in wounds that healed by first intention good catgut held for about a month, and kangaroo tendon for two. In the three carotids of horses in which alone suppuration had occurred, it was proved that catgut was rapidly becoming absorbed in fourteen days, and had completely disappeared in fifty-one days, and that kangaroo tendon was but little altered in ten days.

MR. BARWELL agreed largely with the conclusions of the authors, especially as to the undesirability of rupturing the internal coats. Whether it was preferable to use the round rather than the flat ligature for the purpose was a matter on which he joined issue with them. A small round ligature would more readily tear the inner coat. We ought not to lose sight of the different states in which the vessels are: some were

tightly stretched, and others in a lax state. He had formed his own conclusions as to the results of experiments on dead subjects and living animals. He considered that a flat ligature could lie smoothly, and the knot was not clumsy, though of large size, which he regarded as an advantage, for a small knot of catgut was more liable to set up ulceration and perforation, as in a case of innominate aneurism in which Mr. Bennett May ligatured the carotid artery. A large knot obviated that difficulty of ulceration and perforation altogether. Again, a small knot was not sufficiently broad to resist the impulse of the blood-current. A good-sized clot in the vessel was also advantageous as a check to the force of the blood-current. There was further a general unreliability in carbolized catgut, which at least introduced an element of undesirable uncertainty, for it might be absorbed in a very short time.

MR. SCOVELL SAVORY considered that the authors had collected an interesting series of facts, but he could hardly follow them in their conclusions that it was neither necessary nor advisable to rupture the inner coats. He failed to see how their experiments proved that it was not advisable; they had made no "check" experiments; their paper abounded in *ex-parte* statements; the experiments had all been done in one way. If check experiments had been made they might have had facts which would justify their conclusions. Experimental investigations tended to show that the arterial system of animals differed very much from that of man; it was much more difficult to excite septic processes in animals, as Dr. Jones long ago proved. It was owing to the greater number of mishaps where animal ligatures were employed that made many surgeons hesitate still to employ them in preference to silk ligatures.

MR. T. HOLMES also congratulated the authors on their industry and on the interest of the facts collated in the paper; but he hesitated to accept their main conclusions. He would not like to trust experiments on animals in guiding him as to what to do in the human subject. In one of Mr. Barwell's cases of ligation without rupture of the internal coats the vessel became pervious not long after the operation. He had been content with the practice at St. George's of division of the internal coats. In one instance Mr. Pick ligatured the femoral for popliteal aneurism without rupturing the internal tunics, and pulsation recurred, though he felt bound

to add that the vessel was afterwards tied lower down as tightly as possible, and then pulsation recurred. In truth, a long period of experience on human subjects would be necessary before we could accept the conclusions of the authors. In division of the internal tunics a greater amount of lymph was thrown out, which in itself would appear to be an advantage, and he asked whether there was a corresponding disadvantage in this excess of lymph. He could not but think that experiments on animals were not entirely satisfactory. It was at one time thought that a powerful barrier to the restoration of the circulation would be found in the employment of silver ligatures, which would produce no irritation. But in one instance in the practice of Brodhurst secondary hemorrhage occurred. In a paper read before the Pathological Society, Mr. Pick also showed how the artery could be occluded without dividing the internal coats by ligatures, which at the end of three weeks had not caused ulceration.

MR. C. DENT had been engaged in a similar inquiry on the femoral arteries of sheep, using kangaroo tendon prepared in chromic acid, the internal tunics being completely ruptured. He considered that rupture of the tunics made the operation certain and was a better surgical practice. In one case pus formed around the ligature, which had not been rendered sufficiently septic. In none of the cases did secondary hemorrhage occur.

MR. BARWELL explained that he used the ox aorta ligature in the case referred to by Mr. Holmes, and the failure was purely an error of manipulation, and had nothing to do with the nature of the material employed.

MR. W. EDMUNDS, in reply, pointed out that even in tying a flat ligature the knot was liable to present an angular projection, and so Mr. Barwell's argument that with a flat ligature the adhesion between the coats was favored need not always hold good.

MR. BALLANCE, in reply, admitted that more skill was necessary to apply a round ligature so as not to rupture the internal coats, but a very little practice in the post-mortem room would suffice to show how to occlude the lumen of the vessel, so that no water would be syringed through. On examination it would be found that no damage to the tunics had been done. A long piece of artery was occluded even with a small ligature, as the specimens on the table showed. Dr. Jones's classical work was referred to by Mr. Savory, but at that time it was thought that the question of rupture of the coats had been

threshed out. His object and that of Mr. Edmunds was to present a series of observations showing what happened when the coats were not ruptured.

Perhaps the chief interest of this paper lies in the careful and extensive pathological investigation, but it has an evident direct bearing on surgical practice which could not fail to excite the interest and close attention of the surgeons present. The chief contention of the authors was that it is "neither necessary nor advisable" to ligature the vessel so tightly as to rupture the coats. It is necessary, however, to obliterate as nearly as possible the lumen of the artery. The object aimed at should be the excitement of just sufficient damage to cause a chronic or subacute arteritis, which leads to permanent occlusion of the vessel. The internal coats should not be ruptured for fear of opening up channels for septic absorption, and with a view to preventing such a degree of damage as would be followed by ulceration and subsequent danger from secondary hemorrhage. If it were easily possible to excite just sufficient inflammation to secure the object in view by the means advocated, considerable progress would be made in arterial surgery. Mr. Savory, Mr. Holmes, and others appeared to doubt the possibility of obtaining the desired end by the method recommended when applied to the human subject. An examination of the specimens, both macroscopically and microscopically, is sufficient to convince the most sceptical that the means employed in sheep and horses were adequate to the end in view. But here comes the rub. Can we argue from animal to man—from the arteries of sheep and horses to those of human beings? Theoretically we do not perceive why this should be impossible; but even the authors of the paper would probably admit that this is a question which must be submitted to the test of a prolonged experience in the operating-theatre and wards of hospitals for human beings. One point on which the authors commented was the undesirability of attempting to rupture the internal coats of diseased arteries when these have to be delimited in their continuity. Every surgeon must feel the immense importance of the question; for assuredly a benefit of no mean order would be conferred on individuals with diseased arteries if a ligature could be so applied as to be sufficient to incite an inflammatory process adequate to effect the occlusion of the lumen of a diseased artery, and without being so firmly tied as to rupture its internal coats.

OBSERVATIONS ON THE NEW ANTI-PYRETICS.

In spite of the great number of clinical observations on the comparative value of the antipyretics recently introduced into the practice of medicine, additional reliable data concerning their employment are certain to receive attention.

DR. PAVAY, chief of the Presburg Hospital, publishes in the *Wiener Medizinische Wochenschrift*, 1886, No. 8, an essay on the subject of antipyretics, from which we abstract some of the more interesting topics.

Antipyrin is at present acknowledged to surpass, in certain affections at least, quinine and salicylic acid. It fully meets the requirements of a practical antipyretic; for there is no acute febrile affection of which antipyrin is not able to reduce the temperature with certainty. The extent and duration of the reduction of temperature caused by antipyrin is directly proportional to the quantity of the drug employed. Secondary symptoms cannot be said to be wholly absent after the use of antipyrin, but they are decidedly milder than in the case of quinine and salicylic acid.

There is a considerable variance of opinion as to the proper dose of the drug. Ziemssen, for example, in a case of pneumonia or typhoid fever, orders daily doses of 3 dr., while other clinicians prescribe only 1 to 2 dr. *pro die*. Pavay regards the latter dose as quite sufficient, and denounces the fashion of German physicians to exhibit the antipyretic remedies only in very large doses. Pavay has employed antipyrin with satisfactory results in typhoid fever, erysipelas, puerperal fever, phthisis, pneumonia, acute articular rheumatism, variola; in fact, in almost every febrile affection. The quickness and certainty in its action are especial recommendations for its employment.

The temperature lowered by antipyrin rises in most instances slowly, without producing any rigors. The sweat caused by antipyrin is always less excessive than that produced by salicylic acid or thallin; in phthisical subjects it produces the greatest sweats. The fact of a measles-like eruption following after the use of antipyrin is well known.* The drug may also be given hypodermically or as an enema. If it should occasion diarrhoea when given *per os*, extract of opium may be conveniently combined with it.

Pavay made also comparative experiments with quinine, salicylate of sodium, and antipyrin, by exhibiting all three drugs to the same patient (phthisis). He found that the effects were identical if of quinine 15 to 22 grains, of antipyrin 37 grains, and of salicylate of sodium 45 grains, were used. In phthisical subjects, however, quinine and salicylate of sodium are both contraindicated, the former on account of the "chininism" (cinchonization), the latter on account of the excessive sweat which it produces even when combined with atropine.

Antipyrin is in one to two hours after its ingestion recoverable from the urine; in presence of a solution of chloride of iron the urine assumes a red-brown color.

In conclusion, Pavay mentions thallin, resorcin, hydrochinon, chinolin, kafrin, benzoate of sodium, veratrine, and digitalis as antipyretic remedies, but regards them all as little prompt and reliable. Besides, nearly all cause such untoward after-effects that for this reason alone their employment is not advisable. Thus, chinolin causes vomiting, resorcin and hydrochinon great nervous excitation, and kafrin a very unpleasant sensation in the face and nose, and besides that vomiting, cyanosis, and finally collapse.

THE PRESERVATION OF SOLUTIONS FOR HYPODERMIC USE.

An ingenious method of preparing and preserving solutions for hypodermic injection, according to the *Pharm. Journ. and Trans.*, May 1, 1886, has been devised by M. LIMOUSIN. It consists in first sterilizing small glass globules, of rather more than a cubic centimetre capacity, and having a long drawn out neck, by heating them in a stove to about 200° C. These are filled with the solution, either by introducing the end of the neck of the heated globule into the cold liquid, or by injecting the hot liquid by means of a finely-pointed syringe. The end of the neck is then sealed in a flame. The solutions are prepared hot, with water that has been boiled and previously filtered through a Chamberland filter. M. Limousin rarely uses distilled water, as he considers the salts present in ordinary water retard the invasion of fungi. Under these conditions he states that solutions of ergot and hydrochlorate of morphine have remained intact for upwards of a year. When required for use, the fine neck of the globule is broken off, and a sufficiency of the liquid taken up in a syringe direct.

* At a visit to the General Hospital of Hamburg, Dr. Wolf presented a phthisical patient, in whom antipyrin had produced a genuine scarlet-fever rash.

ON AMBLYOPIA PRODUCED BY INTOXICATIONS.

DR. BERGMEISTER held, in the Wissenschaftliche Versammlungen at Vienna (*vide Wiener Med. Woch.*, No. 8, 1886), a discourse on the interferences of vision produced by the action of poisons. There is an acute intoxication-amblyopia as resulting from the ingestion of certain medicines, such as quinine, salicylate of sodium, and santonine, though the affection is more frequent in its chronic form. Among the causes of the chronic intoxication-amblyopia are: 1, visual interferences resulting from handling toxic agents, such as lead and sulphide of carbon; 2, the results of abuse of tobacco, alcohol, opium, morphine, and hashish; 3, the effects of snake-bites (blindness).

Other intoxications cause simply interferences of accommodation, without preventing an amaurosis; to this category belong intoxications produced by anilin, ether, aconite, Calabar bean, chloral, atropine, duboisine, and the poison generated in the sausage. The prognosis of both the alcohol and the tobacco amblyopia is not unfavorable.

HOW TO DETECT ACETONE IN URINE.

It is stated by MONS. P. CHAUTARD (*Lancet*, May 15, 1886) that the presence of acetone in urine or pathological liquids may be readily detected by adding a drop of an aqueous solution of magenta decolorized by sulphurous acid to the suspected liquid, when, if acetone is present, a violet color is produced, the intensity of which is proportional to the amount present. In dilute solutions the coloration does not appear until after four or five minutes; if the amount of acetone is very minute, the urine or other liquid may be distilled, the first portion that comes over being examined. In this way a very minute proportion of acetone may be detected.

ACTION OF CONIINUM HYDROBROMATUM.

SCHULZ and PEIPER report in the *Archiv für Experimentelle Pathol.*, vol. xx. p. 149, their experiments with hydrobromate of coniine. The principal question to decide was whether the drug, employed in a watery solution, was capable to suppress convulsions artificially produced,—for example, those caused by brucine. They found that the respiration in the animals treated with the coniine salt became again deep and easy, and that there

was no noticeable muscular spasm. The convulsions subsequent to the brucine-ingestion could be both avoided when coniine was administered previously, and removed when given afterwards. In view of the anticonvulsive action of the hydrobromate of coniine, the observers regard the drug suitable for practical trials.

Reviews.

DISEASES OF THE DIGESTIVE ORGANS IN INFANCY AND CHILDHOOD, WITH CHAPTERS ON THE INVESTIGATION OF DISEASE, AND ON THE GENERAL MANAGEMENT OF CHILDREN. By Louis Starr, M.D., Clinical Professor of Diseases of Children in Hospital of University of Pennsylvania; Physician to Children's Hospital, etc. With colored plate and other illustrations. Philadelphia: P. Blakiston, Son & Co., 1886.

The scope of this book, as indicated by its title, might have served to restrict the author somewhat, but he has taken it in its widest significance. In his introduction he treats of the investigation of disease, and his directions are pertinent and often original. The section on "Inspecting the Child" is especially to be noted as containing very valuable matter; nothing seems to have been omitted, while the language is graphic, and contains here and there touches of that genius for description which marks the book throughout. In looking through the early pages we see (p. 29) "incessant unappeasable crying is due to one of two causes, earache or hunger," and would suggest in passing two more, thirst and a misplaced pin, and also that earache can be diagnosticated from hunger as well, in many cases, by traction or pressure on certain neighboring parts as by putting the child to the breast or bottle, as the author advises, since food seems a sort of infant solace for all imaginable aches and pains.

Under "Affections of the Mouth and Throat" the author includes catarrhal, aphthous, ulcerative, and gangrenous stomatitis. We feel sure that eventually ulcerative stomatitis will be traced to an origin in some disease affecting the cow and its milk, but at present the author agrees with most authorities in denying it a specific contagium, nor do we think that the causes he enumerates—decayed teeth, want of cleanliness in the mouth, and the too free administration of lead, phosphorus, and mercury—have anything to do with the causation of the disease as he describes it. It will be found, we think, on careful investigation, that in a large majority of

cases the child affected has been recently—*i.e.*, within two weeks—put upon a diet of cow's milk, or upon a different milk-supply, or if previously so fed, that the scalding of the milk has been omitted in that period. It will also be found that the disease follows milk from certain sources of supply, and can attack adults when they are extensive drinkers of such milk, while decayed teeth are only an occasional accompaniment of the disorder, and phosphorus causes its own well-known necrosis, and mercury mercurial stomatitis.

The author lays great stress upon the factor of breath, but it bears no comparison in quality or quantity to that of mercurial disease. In the chapter on thrush the author seems to have overlooked the value of hyposulphite of sodium internally administered, while as a wash he partially recognizes its value, but the reviewer has seen much apparent benefit from its internal administration in 3- to 5-drop doses of the saturated solution, which same solution is a necessity in local application. Anything weaker, as, for instance, the author's 10-grain solution, will generally fail and throw discredit upon the remedy.

Under "Dentition," in regard to eczema of the scalp and face, we find "there can be no question as to the propriety of healing eczema as quickly as possible." Now we think there is some question which concerns the remedies used; we would rather say, eczema should be cured as quickly as ordinary and safe measures would do it. The reviewer has often in times past chased eczema by local applications, generally mercurial, from face to scalp, to eye, to ear, to violent intestinal disturbance, and has been only too glad, after nearly losing his case, to find the dangerous symptoms disappear with the reappearance of the old facial trouble; so that we would say, if any internal medication, any alteration of diet, any assistance to the digestive process and general improvement of health be of service to the local condition, it is called for, but to heal the eruption "as quickly as possible" may involve measures detrimental to life itself.

In nervous disturbances at the time of teething the book advocates the use of the gum lancet, but urges it at an earlier period than many would consider necessary. In chronic hypertrophy of the tonsils the author recommends the use of the solid stick of nitrate of silver. This is so dubious a procedure that we are sorry to see it advocated. As a preliminary to excision it may be employed, for burned tonsils will never sponta-

neously disappear, and will inevitably need the knife. The tendency of the day is towards milder measures, and reserves the knife when these fail. By drying the tonsils carefully with absorbent cotton and painting systematically with iodine twice or thrice weekly, marked absorption will generally take place. Iodine internally will facilitate it, but better still the steady, persevering employment—either by gargling or by brush—of bromide of potassium and ergot. Under the use of this the blanched tonsils soon lose their redundant tissue, and if near puberty—if not already by injudicious management a mass of cicatricial tissue—the glands will diminish to their normal size.

The author, in "Affections of the Stomach and Intestines," gives us his views concerning infant feeding in the earlier months. Recognizing, as do all, that improper and unnatural food is the great provocative of infantile intestinal disorders, the aim of the numberless "infant foods" is to meet the difficulty. The author's favorite food seems to be composed of milk and cream, milk-sugar, and water, in varying proportions. This may answer perfectly with children who would thrive on cow's milk, but for the difficult cases, with feeble digestion, there is still too much casein,—not perhaps too much in theory,—but the casein of cow's milk and that of human milk behave differently under the same circumstances. The reviewer has been satisfied for many years with a formula of cream one part to water five parts, increased to four parts water as the child ages. Average cream contains enough milk—*i.e.*, casein—for the child to manage. With this formula there is no difficulty in raising delicate children in good condition to the age when farinaceous foods can be readily digested. The author's use of milk-sugar and Mellin's food, which latter can only practically serve the purpose of sweetening, seems unnecessary and burdensome. Milk-sugar is by no means always a pure article, or always accessible, and pure cane-sugar in small quantity has never been proved deleterious. While condemning farinaceous foods in the early months, the author, following an eminent authority, recommends barley-water as a diluent—but barley is somewhat farinaceous—and weak veal broth, a favorite with the British writers on this subject, but liable to all the objections to which veal is open, and by no means easier of digestion than the broth of grown animals.

Whether it be worth while to elaborate into a separate existence the condition met with in

gastro-intestinal catarrh, which the author describes as "mucous disease," is a question. For its relief we have given us a special diet table, from which farinaceous food is omitted as far as possible. The recommendation of 20 drops of tincture of myrrh in this condition, given after meals, might in many cases be altered to before meals. In connection with this symptom we find a description of stomach-cough which would make Mrs. Gamp's mouth water. This cough the author describes as a common accompaniment of "mucous disease," and remarks upon its perplexing similarity to whooping-cough, and upon the fact that ordinary remedial measures are useless. We notice in the formulæ given for its relief the well-known prescription for whooping-cough of the late Dr. John Forsyth Meigs, consisting of alum, belladonna, and syrup of ginger. Can it be possible that those habitually using it for pertussis with so much success have been by an error of diagnosis prescribing for and relieving "stomach-cough" all the while?

For chronic entero-colitis we have more diet tables, and good use is made of raw oysters and junket as articles of food. From the number of formulæ appended to the chapter the reader should be at no loss in prescription-writing, especially as the author has taken great pains to discriminate as to the conditions requiring the special use of each one. Perhaps he has erred in the too minute subdivision of his subject, it being wellnigh impossible to rigidly class many cases of intestinal disease, and a slight glance at his pages will show that at least three separately-described conditions demand much the same diet and remedies. Cholera infantum has received but slight attention, and is regarded by the author as very formidable. "In the fortunate cases in which this plan is successful," he says, as though somewhat hopeless about the result; yet we think many will agree that the class of cases to which the author restricts the name, cases previously in health, uncomplicated, make better and more frequent recoveries than the cases of acute entero-colitis, which so readily become chronic. There is, too, no recognition of the value of carbolio acid and creasote in the management of the vomiting of cholera infantum.

Acute dysentery, which is at last admitted as a possibility in infants, receives much attention, but there is no mention of the benefits arising from medicine administered by suppository, or of the value of large demulcent enemata, or the administration of salines or

ippecac. The difficult question of "Habitual Constipation" has been carefully treated. Cascara, perhaps the best remedy for the condition, is mentioned nearly at the end of the text. And senna has not received enough consideration, since, in the truly habitual constitutional cases of constipation, senna alone, or in any of its combinations, of compound liquorice-powder, confections and laxatives, will immediately solve the difficulty.

The chapters on simple atrophy, typhlitis and perityphlitis, and intussusception are excellent, and worth a careful study. True congestion of the liver the author thinks a quite common disease of children from four years upward. There must be "enlargement of the organ, with pain and tenderness, jaundice, and clay-colored, offensive stools." Fatty infiltration, fatty degeneration, amyloid and syphilitic liver, are minutely described, and one case of abscess of the liver in an infant is given in detail. Acute tubercular peritonitis and ascites conclude Part II., and Part III. is devoted to the "General Management of Children." While the author believes in the value to the child of the mother's breast, in regard to wet-nursing his words have a singular sound, when, after enumerating the advantages and disadvantages of a wet-nurse, we read, "for these reasons it is preferable in the majority of instances to trust to careful bottle-feeding." And, again, "there can be no doubt . . . that, taking the average, infants properly brought up by hand are better developed and enjoy more perfect health than those completely breast-fed." Condensed milk is very properly condemned as a sole diet. The process of peptonizing milk is minutely described, and many formulæ for milk-food suited to different ages are given, as well as diet tables. Taken as a whole, this book shows a marked individuality, where individuality is difficult; it is thoroughly practical in its aim; its tone is good; it is not overburdened with technicalities or the labored language of the schools, but speaks the thought of the true practitioner, whose aim is rather to cure than teach. While here and there one may descant a little, the pages are few on which one can find anything doubtful, or search in vain for anything indispensable. E. W. W.

THE STUDENT'S MANUAL OF VENEREAL DISEASES.
By Berkeley Hill, M.D., and Arthur Cooper, M.D.
Fourth Edition.

This small volume is evidently in demand, having reached a fourth edition, and we hesi-

tate somewhat to give our opinion in the face of such success ; but it is always a problem to us why this class of medical books are successful. They certainly cannot satisfy one who is desirous to study the diseases of which they treat, and to turn to them for information in order to treat the diseases which they discuss is generally useless. That the above work is not good we cannot for a moment think. It is, indeed, very good for what it claims to be, and as an outline of the larger and most excellent work upon the same subject by the same authors, it could not be better.

LOCAL ANÆSTHESIA IN GENERAL MEDICINE AND SURGERY, BEING A PRACTICAL APPLICATION OF THE AUTHOR'S RECENT DISCOVERIES. By J. Leonard Corning, M.D.

New York: D. Appleton & Co., 1886.

Dr. Corning, unlike many writers of the day, enjoys the advantage of a thorough knowledge of his subject. He will be remembered as the author of "Brain Rest" and "Brain Exhaustion," and as the discoverer of the "carotid compressor," a means of alleviating suffering and procuring sleep, singularly unappreciated by the world. In fact, the human race, depraved as it is, was not ready for the carotid compressor: it was born, like the photograph, before its time. Yet even now it may be pursuing in secret its insidious work. Acute but unprincipled minds may have silently recognized its value, and by this time it may have lulled to perpetual sleep many a political opponent and a domestic enemy, but certain it is that the instrument which promised so much, which made the miser count in secret his spare cash, and the mother-in-law tremble with unspoken fear, is seldom mentioned to-day. It is not on sale at the nearest drug-store, nor is it carried in the pocket of the enterprising physician. Something very like it is extensively employed, under a more forbidding name, in some parts of Europe, for purposes of capital punishment, but elsewhere it seems to have made but little headway.

Dr. Corning now claims to have made another discovery. In the present volume he gives us an account of cocaine from its discovery up to his own time, up to the occurrence of Dr. Corning, so to speak. This drug had been previously used locally by others in many operations, and a considerable number of facts had been already accumulated ; but to make local anæsthesia complete and prolonged, so much of the drug was

necessarily employed as to render the patient liable to subsequent danger from the impression upon the system at large. Dr. Corning tells us that his own discovery was by no means accidental ; but, like the discoveries of Columbus, Watt, Prof. Bell, and other true discoverers, it was "the direct outgrowth of a chain of deductive reasoning." An "outgrowth of a chain" is something truly unusual. Even Columbus and the other worthies never found anything like that. This "outgrowth," or discovery, consists in a plan for confining or retaining the cocaine after its hypodermic injection within limited areas, and is done by mechanical means. In short, the mechanical genius which conceived and gave to a thankless world the carotid compressor, found but little difficulty in solving this problem.

For a limb the bandage of Esmarch is applied up to the desired point ; then, after injecting the cocaine, and waiting a few moments for a little diffusion to take place, the bandage is continued upward, leaving the injected area uncovered, and the subsequent procedure is the usual one with the Esmarch bandage. This plan Dr. Corning has extended and modified to meet almost all imaginable conditions, and he describes and depicts his methods and his instruments and bandages *in situ*. We are also introduced to an anæsthetic trochar, tourniquet, and clamp, to his own hypodermic syringe, and very proud we are to make its acquaintance. He shows us his method of mapping out the veins, and his anæsthetic bistoury, an æsthesiometric probe. For other localities than limbs he uses incarcerating rings and hæmostatic clamps. All these are necessary if the reader would practise "Corningism" successfully ; and so valuable a method is it that the hip-joint can be excised under its influence, and bone surgery generally is possible. In fractures and dislocations Dr. Corning also resorts to it.

The author appends some experimental observations of his own on the "Influence of Cocaine upon the Healing of Wounds," "Spinal Anæsthesia and Coca Medication of the Cord," and an appendix, detailing the successful employment of Corningism by others.

This discovery will doubtless prove of great value, and by no means deserves to be classed with the "carotid compressor." Man now, thanks in part at least to Dr. Corning, seems to be able to render himself superior to pain, while preserving his intellectual facul-

ties unimpaired, even momentarily, and what wonderful uses do we foresee for this process in the future! By its means the ingenious physician may render the wife-beater proof against even the lash of the Delaware sheriff, and, should religious persecution ever again arise, may enable the martyr to meet the flames even hilariously, if only thoroughly Corningized, or, as the word will probably be abbreviated, Corned. The tender-hearted anarchist will anæsthetize his capitalist, hunger and cold will be banished by chewing coca-leaves, and coca, as a true tree of life, assisted by the hypodermic needle, the æsthesiometric probe, and incarcerating rings, will make earth once more a paradise.

E. W. W.

A SYSTEM OF PRACTICAL MEDICINE BY AMERICAN AUTHORS. Edited by Wm. Pepper, M.D., LL.D., etc., assisted by Louis Starr, M.D. Vol. IV. Philadelphia: Lea Bros., 1886.

This volume is devoted to diseases of the genito-urinary system, the muscular system, diseases of the skin, and medical ophthalmology and otology. It embraces subjects not always discussed in "systems of medicine," and, where the topics pertain rather to the domain of surgery, the aim of the writer is often to take rather a medical than a surgical view of the field.

The gynæcological portion of the book is quite full, and embraces articles from many eminent specialists, and forms a section of great interest and value. While it would be invidious to draw too many comparisons, and where so many valuable articles are brought together, we confess to being particularly impressed by Dr. Ed. L. Key's excellent chapter on "Diseases of the Male Bladder," Dr. Ed. C. Dudley's "Displacements of the Uterus," Dr. J. C. Reeves's "Disorders of the Uterine Functions," Dr. Byford's three articles on "Fibrous Tumors," "Sarcoma and Carcinoma of the Uterus," and Dr. Wm. Goodell's "Diseases of the Ovaries and Oviducts." Dr. Alexander J. C. Skene, in "Organic Diseases of the Bladder," seems still almost as heedless of the value of belladonna and its alkaloid in these affections as when he wrote his "Diseases of the Bladder and Urethra in Women" some years ago. Dr. Geo. J. Engelmann gives us an excellent chapter on "Abortion," going into rather than over the many intricate questions of diagrams and management so familiar to those who have made family practice a business. These articles form an invaluable col-

lection of monographs upon subjects of kindred interest, and have an entirely unique value. A vast mass of literature would require searching and sifting to bring together all the matter here prescribed in but a portion of a single volume.

The section on "Diseases of the Muscular System" contains Dr. J. C. Wilson's suggestive and practical article on "Myalgia," Dr. Jas. Tyson's "Progressive Muscular Atrophy," and Dr. Mary Putnam Jacoby's "Pseudo-Hypertrophic Paralysis."

The section on "Diseases of the Skin," by Drs. Louis A. Duhring and Henry W. Stelwagon, gives us in moderate compass the most recent views and approved methods of treatment.

Perhaps the most striking and erudite article in the book is that on "Medical Ophthalmology," by Dr. Wm. F. Norris, covering about fifty pages. It has demanded for its production not only a great amount of general and special medical knowledge, but that rare faculty which enables a writer to see the general dependency and intimate relationship of many topics, by no means kindred, to the superficial and merely systematic observer. The aim of the article is "to give an account of the eye-symptoms which may be seen in the course of diseases of the general system and in connection with the pathological conditions of the various organs of the body." Carrying out this aim, Dr. Norris has produced a truly invaluable article.

"Medical Otology" concludes the volume, and is written by Dr. George Strawbridge. While more limited in its scope than the preceding article, it will prove of great use to the practitioner.

Of many articles in this volume we have made no mention. Nearly all will be found to be able presentations of the subjects they discuss. Some topics of great importance are hastily treated, and the captious will find much to criticise; but, as a whole, we consider vol. iv. as the most valuable of the series so far issued.

INSANITY AND ITS TREATMENT. LECTURES ON THE TREATMENT, MEDICAL AND LEGAL, OF INSANE PATIENTS. By G. Fielding Blandford, M.D. Oxon. New York: William Wood & Co., 1886.

The present volume is one of the issues for the year 1886 of William Wood's Standard Library, and is, we presume, a reprint of the London book, or, in other words, is one of those appropriations of the property of other people which, being at present legal, are still

respectable, but which the passage of a proper International Copyright law will make a moral crime. We have read a great part of the book with much satisfaction. The English is good and clear (we wish as much could be said of the type), and the whole impress left upon the mind is that the work is the product of one who possesses good common sense, has not been driven mad by an excess of German speculative medicine, and has seen much of insanity. We have been especially interested in the chapter upon classification, which practically leads to the conclusion, which we ourselves reached some time ago, that there is at present no possible satisfactory classification of insanity. Perhaps we might confess that we have had an acute attack of the Germanic fever, but are now in that condition of exhaustion preceding convalescence which leaves the mind full of remorse and good determinations for the future, and that the present volume has been decidedly tonic in its action upon it.

If we have any criticism to make of the present work, it is that it conforms too closely to nature for the use of the student. Undoubtedly in nature one form of insanity merges into another, and all manifold groups, which have been separated by specialists, are, in real life, dovetailed into a composite entity. For the purposes of the student, the arbitrary groups are, however, necessary for him, and they should be drawn clearly and sharply. After, but not before, the knowledge of these types has been acquired, the dovetailing and interweaving processes may take place in the mind of the student. A wider knowledge of literature on the part of the author would, perhaps, have saved some mistakes. Thus, we read, page 193, that the patella reflex in general paralysis of the insane is at first exaggerated, afterwards dull, and finally absent, and on page 205, locomotor ataxia is not likely to be confounded with general paralysis of the insane. Now, the truth is, that locomotor ataxia is exceedingly frequent in general paralysis, and that it sometimes precedes and sometimes follows the development of the cerebral disease. Moreover, not rarely, instead of the sclerotic change attacking the posterior columns, it attacks the lateral portions of the cord, and the condition of the patella reflex depends upon the condition of the spinal cord, and is entirely independent of the brain-changes.

In dismissing this book, we want to again say that we consider it an extremely valuable practical work for those under whose charge the insane are brought.

VON ZIEMSEN'S HANDBOOK OF GENERAL THERAPEUTICS. Vol. IV.

New York: Wm. Wood & Co., 1886.

The fourth volume of this seven-volumed handbook is devoted to a discussion of the treatment of disease by climate and to general balneotherapeutics, the first part being written by Dr. Hermann Weber, the second by Prof. Otto Leichenstern. The same general characteristics that have distinguished the previous volumes are present in the one before us,—great attention to minutiae, great striving after scientific results, with a practical result hardly commensurate with the amount of labor. The knowledge of German literature displayed is very great, but the reader would be led to think that, outside of German, neither the science nor the art of medicine existed. For the well-trained American practitioner, who will read with discretion and care, much of value exists in the volume, but for those who desire an absolute guide the present book leaves still an hiatus, especially in regard to balneotherapeutics. Not only is there nothing whatever in regard to our American springs and baths, but very little virtue seems to be attached to any bubbling water that is not heavily impregnated with the joys of the Fatherland.

LECTURES ON THE DISEASES OF THE NOSE AND THROAT. DELIVERED DURING THE SPRING SESSION OF JEFFERSON MEDICAL COLLEGE. By Chas. E. Sajous, M.D., Lecturer on Rhinology in Spring Course at Jefferson Medical College, etc.

Philadelphia: F. A. Davis, Att'y, Publisher, 1885.

Dr. Sajous has given the medical world a carefully written, excellently illustrated work upon the subject of Diseases of the Nose and Throat; in fact, the illustrations are of unusual value, and are introduced with the utmost profusion. One hundred chromo-lithographs from oil-paintings by the author, and ninety-three engravings on wood, are given away with each volume. The author's experience is wide, being drawn not only from private practice as a specialist, but still more extensively from his connection with one of the largest special clinics in Philadelphia. He has aimed at interesting the general practitioner, his style being easy, clear, and free from too much technicality, and we readily see that the book will prove attractive to many who do not pursue special practice. The book illustrates well the fact that there exists a germ of decay in the apparently flourishing body of specialism, and the years will be few before we see all general practitioners of average capacity the possessors of

equal knowledge in all branches with the specialists of to-day. While aiming at little originality, the author claims to give to his work the results of "testing the therapeutic value of new methods." And we find at least two new things,—the new names which he has bestowed upon post-nasal catarrh, now "posterior nasal pharyngitis," and hay-fever, which appears as "periodical hyperæsthetic rhinitis." This latter name is so simple, fluent, and mellifluous that the public may actually clamor to have it, and it seems to us an exceedingly ingenious thing, when there is nothing new left to be done for the miserable old disorder, this giving it a new name and treating it all over again. Concerning the former disease, the author remarks, "The almost universal prevalence of post-nasal catarrh in this country has given rise to much speculation among specialists." The author, from want of space, will only state those views as to causation which he has personally entertained for some time. He then goes on to tell us about "chronic inflammatory processes in the neighboring parts," hypertrophic polypi and other growths, ignoring entirely the great question of whether the human nose was originally framed rapidly by its Creator, or slowly by evolution, strong enough to endure the peculiarities of our American climate, whether we as a race, rather mixed to be sure, are able to endure it, or whether any other race is better fitted. He fails also to investigate the burning question as to whether the American Indian had or has post-nasal catarrh, or hay-fever either. Has the noble savage ever been observed in a frequent use of the pocket-handkerchief, or in those substitutes for it somewhat in vogue among our imported citizens? Certainly he has had free access to climate and to pollen for centuries. Now, all these questions lead up to what we consider a rational treatment,—protect from the rough climatic changes, or raise the standard of the individual to meet them; but the nasal specialist prefers rather to abolish partially the nasal organ. Why not snip it off in the newly-born? Circumcise the nose as it were, uniting the raw edges with neat sutures, carbolized silk-worm gut preferred. Or, in the yielding state of the infantile bones, obliterate by pressure the nasal cavities. Perhaps, better still, permanent silver tubes, self-retaining, might be passed in either nostril, and compression then used. True, the senses of smell and taste would be destroyed; but smell is often offended, and taste there is no rule for. By

these tubes the air would be conveyed to the lungs without impinging upon the too sensitive nasal membranes, and, if not sufficiently warmed, small wire diaphragms might be fitted to the outer end of the tubes. The beauty of another nose would no longer excite envy; no noses would be broken or bitten off in the exercise of angry passions; following one's nose, which so often leads one in devious ways, would be impossible, and the terms Roman, aquiline, Grecian, and, best of all, the derisive word "pug" would fall into oblivion. The nose no longer being used, a few generations would direct the unused developmental energies of the economy to other parts,—brain perhaps, ears probably. No longer would our nasal tone be commented on so freely by the inhabitants of Britain, pocket-handkerchiefs could be abandoned, and bronchial catarrhs might also disappear when they attempted to begin in the head and were foiled. The remedy snuffine, so dangerous to mention, would not be mentioned for obvious reasons, and the nasal specialists, rested and refreshed, could organize invasion into the territories of the oculist and the aurist.

Among the many topics treated of by the author we find a chapter on epistaxis. This contains a valuable summary of the treatment of this at times very obstinate condition. The author recommends packing the anterior nares in obstinate cases, when the bleeding-point is sufficiently anterior. This is sometimes difficult to determine. The mere appearance of blood at the posterior nares, when the head is erect, by no means indicates that the source of the trouble is posterior; in fact, in the absence of definite information, packing the anterior nares should always be tried before plugging the posterior, an operation by no means easy, and at times, from constitutional causes, impossible. The pledgets employed are tied on a strong silk thread at frequent intervals, and the author recommends saturating them with styptics in solution before application; but plain absorbent cotton, smeared with vaseline to promote easy application, is much more readily used; in fact, the nostrils are packed for the sake of the pressure exerted.

In discussing the treatment of chronic post-nasal catarrh, the author says (page 229), "Agents which are partly eliminated through the glands of the nose and throat, when taken internally, are sometimes very serviceable." Cubebs is the principal remedy he has in mind, and ammonia with ipecac. We would suggest

eucalyptus, which has proved serviceable in many obstinate cases, as worth a further trial; and among local applications tinct. benzoini comp. of the Pharmacopœia.

In chronic and follicular pharyngitis, among the many local applications recommended, we look in vain for ergot, which, locally applied, alone or in combination with glycerin, possesses the same power as elsewhere, of constricting the dilated vessels. A few days' employment will often cause a visible diminution of their enlargement, and a simultaneous relief of the annoying dryness. The author describes membranous pharyngitis, and among its synonyms gives "aphthous sore throat," "croupous pharyngitis," and "herpes pharyngis." We think the latter synonyme an error, for, following the author's description closely, we find him enumerating among its causes "exposure to the influences of infectious matter, or close contact with persons suffering from diphtheria, scarlatina, etc." Our objection is a double one. There may be a special separate disease, "membranous sore throat," but if so, it is not caused by exposure to scarlatina and diphtheria. Else, in all human probability, it is but modified diphtheria, and can give the contagion to others; in fact, the profession is at present, thanks to the laws for the compulsory notification of infectious diseases, engaged in dodging the whole question. Adults are seldom attacked with severe diphtheria. They generally have the so-called diphtheritic sore throat; in fact, about what Dr. Sajous terms membranous pharyngitis. But the fashion of the day is to ignore light cases of diphtheria. Of all diseases it alone presents, according to most authorities, no light cases. Its mortality is high. In order to have it a child must either die or barely escape with its life; but the adult, with his simple patchy sore throat, is, in our opinion, in most cases, the disseminator of the poison which strikes so mysteriously. The second objection we make to the author's synonyms is in "herpes pharyngis" being named as equivalent to the condition under consideration, for there is a true herpes of the throat, seldom seen, we grant, but really existent, characterized by the same peculiarities as herpetic affections elsewhere, vesiculated in clusters, or in line of clusters, traversing the pillars, the soft palate, and the posterior pharynx, and it presents no points of similarity with the description of Dr. Sajous. It is caused by inhaling very sharp, dry, cold air through the open mouth, and, except the local pain, presents no great constitutional disturbance.

Taken as a whole, the volume of Dr. Sajous, however, will prove very useful, though we warn the beginner not to expect always to find the peculiar florid mucous membranes depicted in the author's chromos. The chapter on tracheotomy, towards the end of the book, gives us an illustration of the author's scale for tracheotomy tubes. For use in cases from six months old to twenty years he advises oral tubes, and has given a very excellent chapter on the subject.

E. W. W.

HANDBOOK OF PRACTICAL MEDICINE. By Dr. Hermann Eichhorst, Professor of Special Pathology and Therapeutics, and Director of the University Medical Clinic in Zurich. *Volume I. DISEASES OF THE CIRCULATORY AND RESPIRATORY APPARATUS.* One Hundred and Three Wood Engravings.

New York: William Wood & Company. 1886.

This is a somewhat elaborate handbook, and is a work of a high order, notwithstanding its modest title. Beginning, *in medias res*, with diseases of the circulatory apparatus, it is at once practical and concise. There is no waste of words in rewriting the well-worn introductions, but the subjects are handled in the most practical and thorough manner at once. Throughout this section special attention has been given to the illustration of sphygmographic tracings. The section includes diseases of the pericardium, heart-muscle, endocardium, neurosis of the heart, and diseases of aorta; diseases of larynx specially illustrated; of the bronchi, lungs, pleura, and mediastinum complete the volume. The chapter on the endocardium is one of the most able. The study of malignant endocarditis which the author gives is very thorough and complete. He considers the bacterial origin of this disease as fully established. Though generally traceable to wounds and septic poisoning through them, as in operations, injuries, puerperal fever, etc., it follows acute infectious diseases also, and at times "no cause can be demonstrated." Old rheumatic joint and endocarditic changes are often found previously existent. The pathological changes are minutely described, with the researches up to date into the bacterial problem.

The author says, p. 73, "The symptoms are extremely manifold." "In other cases the causes of the pericarditis are so prominent that the latter remains hidden," and "we may boldly maintain that no two cases are entirely alike." "In the typhoid form, days and even weeks may elapse before the diagnosis is decided, in other cases the diagnosis

of typhoid fever, which had been made with certainty, is suddenly overthrown on account of new developments, and changed to septic endocarditis," while previously we read, "In some cases death occurs in a few hours or days."

P. 75: "The differential diagnosis between intermittent fever and septic endocarditis may be undecided for a long time," and "as a rule the disease is recognized with great difficulty." "Special weight must be attached to embolic processes which are susceptible of external examination," as retinal hemorrhages in the diagnosis from typhoid fever. As for treatment, support strength, combat inflammation, prevent the detachment of emboli, and destroy the bacteria. To do the last mentioned the author advises salicylic acid and its compounds, large doses of alcohol or quinine, corrosive sublimate claiming some apparent successes, benzoic acid and benzoalis, which deserve some trial; resorcin, which is doubtful and probably dangerous; ice-bags over the heart, and where the pulse is rapid digitalis and nitrate of potassium.

The chapter on "Neurosis of the Heart" embraces nervous palpitation, nervous cardiac pain, Basedow's disease, and intermittence of the heart. In the treatment of angina, ice-bags to the cardiac region are mentioned as sometimes useful, and sometimes "they do not act well." Hypodermic morphine is surprisingly and rapidly beneficial, but not devoid of danger, nor are chloroform or ether inhalations safe. Amyl nitrite "will only be useful" when there is "coolness, pallor, or a livid color of the skin." The recently-advised use of potassium iodide is not mentioned by the author.

In the chapter on "Diseases of the Bronchi" there is given an appendix on diseases of the trachio-bronchial lymphatic glands. Acute inflammatory enlargement of these glands, the author tells us, is an almost constant concomitant of acute inflammation of the air-passages. Rupture of these glands "is evidently not a frequent cause of death," though their suppuration, rupture, and discharge is very common.

The chapter on "Hæmoptysis" is rich in diagnostic suggestion. The chapter on "Alveolar Emphysema of the Lungs" contains, among other illustrations, one of a pneumatic cabinet. The two figures, presumably medical, seated in its spacious interior, are engaged, the one in reading the other in meditation. As the air became rarefied their positions probably change to others more active

and earnest, though less dignified and graceful. Throughout the work the illustrations are apt and instructive, and as far as the first volume goes it promises us an exceedingly useful and thorough work on the subject of practical medicine.

E. W. W.

SEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF ILLINOIS, with an Appendix, 1885.
Reprint of National Board of Health. 1885.

The expectation of cholera has given State and National Boards of Health a large and comparatively inexhaustible topic, and enabled hundreds of local sanitary authorities to rewrite and publish at public expense the threadbare history of the disease. On paper, how hard they have striven to protect us! Off paper, perhaps from no fault of their own, how little they have done! The very paper on which they print their protests against the importation of infected rags has probably been made from infected rags admitted, with the thorough disinfection which a few mild protests and a square back-down always give. The National Board's Report gives us a summary of the sanitary legislation throughout the United States, and in the Appendix a table of the mortality in cities and towns of the United States for 1884, beginning with Bath and ending with San Francisco.

The Illinois Report is mostly made up of tables of vital statistics; contains a list at the end of the medical colleges of the United States and Canada from 1765 to 1885, which may prove useful for reference; gives us any amount of cholera literature, and decisions under medical practice laws throughout the United States.

E. W. W.

CLIMATOLOGY AND MINERAL WATERS OF THE UNITED STATES. By A. N. Bell, M.D., editor of the *Semitarian*, etc.

New York: William Wood & Co., 1885.

To know our own range of climate thoroughly is to take the first step to its proper use. To do this we must have a clear understanding of the varied conditions which are met with over a very extensive territory, ranging in extremes from tropic to polar. A good guide to the varieties of weather likely to be experienced at any given time in the year, in any given place, is invaluable, when sending our patients in quest of a healthier or more suitable atmosphere than their own locality affords. The probable amount of rainfall, the extreme variation of the thermometer, the dryness and the moisture at given seasons, the general features of the

country, nature of the soil and the geological formations underlying it, and the nature of its waters, all these are necessary knowledge to-day.

The matter of mineral springs alone is very important. To have in one handy volume an analysis of every native spring whose waters have become prominent in the treatment of disease is by no means a small matter, and Dr. Bell has done the medical world a great service in collecting the varied and useful information on these subjects which we find in the volume before us. As a book of reference it will often prove exceedingly valuable.

E. W. W.

DICTIONARY OF PRACTICAL SURGERY. By various British Hospital Surgeons. Edited by Christopher Heath, F.R.C.S., etc.

Philadelphia: J. B. Lippincott Company, 1886.

Full without prolixity, written by experienced writers whose very names claim respect, recent as possible, compact and legible, these are the requirements of a good dictionary of technical science, and the one before us answers the conditions well. As we turn its clearly-printed pages we see appended to the articles well-known names,—names of men especially fitted by experience and special study for their allotted work. We find nothing slighted. Extensive articles where needed. Much condensed in small space where possible. An investigation of special topics leads us to believe that the editor has been fully alive to the necessity of securing recent and fresh work, fully up to the busy times in which we live, when too often the carefully-wrought work of to-day is eclipsed by the work of to-morrow.

As a dictionary of surgery the editor has taken a broad view of his work, and has made the field as wide as possible. We notice many articles of interest which occupy the debatable ground between surgery and medicine. Gynæcology has not been slighted, nor eye-, ear-, and skin-diseases. The arrangements for ready reference, the cross-references, the headings, are all as complete as could be desired.

Among the many contributors the eye strikes the names of Felix Semon, Christopher Heath, Watson Cheyne, J. Warrington Haward, William Stokes, Henry Power, Robert Liveing, G. V. Poore, Victor Horseley, Sampson Gamgee, R. J. Goodlee, J. Knowlsby Thornton, Henry F. Chavasse, Brudenell Carter, Stephen Mackenzie, Thomas Smith, Jonathan Hutchinson, Bernard Roth, and a host

of other names mostly familiar to the reading man, and giving him confidence in the reliability and authoritative character of the book. And we can cordially recommend it to all who need a Dictionary of Surgery.

E. W. W.

A MANUAL OF DISEASES OF THE SKIN. By Balmano Squire, M.B. Lond.

Chicago: A. N. Marquis & Co., 1886.

To relate fully but briefly what is known at present respecting diseases of the skin is the author's aim in this work. Of such moderate dimensions is it that it can readily be carried in the pocket. It affords one an opportunity to familiarize oneself with the most recent views and practice in skin-affections, using the book at odd moments, and yet finding that with all its condensation it is by no means a bare outline of the subject. The author omits eruptive diseases and cancer, and insists on the great primary necessity of an accurate diagnosis. Yet he admits that the "imperfect state of cutaneous pathology throughout Europe" leaves diagnosis in an unsatisfactory state. Blind reliance in the efficacy of specifics is deprecated, and he says, "We have now better means at our command than a course of arsenic, sarsaparilla, or dulcamara." He does not deny that arsenic has its value, but speaks of it as the specific that has fallen most. Throughout the book the author will be found drawing largely on his own experience, and disposed to discard this and that mode of treatment on the ground of its inutility in his hands. The therapeutics of the book, as judged from a rapid perusal, are sound, and the hygienic recommendations made with great care and minuteness, and many practitioners, we venture to think, would be much wiser for a thorough reading of its pages.

E. W. W.

Correspondence.

WAS IT CANTHARIDES-POISONING?

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I was called to see Mrs. B., a spare, nervous woman of about 45, at noon on Saturday, September 5, 1885. She was in stupor, extremities cold, pulse about 120, and very weak, with mild tetanic spasms every five minutes. Respiration seemed normal; the pupils were equal and normal.

The only history I could get at the time

was that her family found her about 10.30 A.M. sitting in her chair, partly stupefied, and complaining incoherently of being sick.

They got her into bed, where she grew rapidly worse while they were waiting for a doctor. She became, so they said, pulseless and extremely cold, so they thought death imminent. At last they began giving brandy in small and frequent doses, and considerable improvement in pulse and temperature had, they said, resulted before my arrival.

After several doses, about 15 drops each, of aromatic spirits of ammonia, at fifteen-minute intervals, and a hot mustard foot-bath, I succeeded in rousing her so as to answer questions. She complained, however, of nothing but pain in the back upon movement.

As all the prominent symptoms had improved, I ordered the stimulant to be continued in diminished doses every half-hour, while I went to my dinner.

Returning at 2 P.M., I found her sleeping naturally, and her pulse and temperature nearly or quite normal. She had in my absence developed a new symptom, strangury, and had passed, with considerable straining and pain, two stools, together about half a coffee-cupful, of mucus mixed with blood.

She had returned to perfect consciousness before falling asleep.

Without awaking her, I left a mixture of opium and ergot, in pretty full doses, to be given when she awoke, and repeated frequently, if necessary, and called again at six o'clock.

At this time she was "as well as ever, except a little tired." She gave this account: In the morning she had felt unusually well, had eaten a hearty breakfast, partaking only of the same dishes as the rest of the family.

At about 10 A.M., while visiting a neighbor, she began to feel an indescribable sensation "in her stomach," not nausea, nor real pain, but a queer feeling, entirely new to her.

In her walk home her head began to swim, her fingers and toes to tingle, and "every drop of blood in her body just boiled." She had a desire to go to the privy, but was afraid to do so lest she should become worse there, and not be found by her family. She had no vomiting at any time. She insists, in spite of her husband's ridicule, that just before she lost consciousness her fingers "turned perfectly black as far up as the second joint."

She had had since childhood no previous illness except sciatica. For this she applied a blister, three by four inches, to the hip on Tuesday, the 1st of September, leaving it in

place twelve or fourteen hours. On Thursday, having pain in the knee, she reapplied the same blister to the calf of the leg, and removed it after about eight hours. In both applications the pain was relieved, but she noticed no other effect, except that the Thursday blister "filled up with yellow corruption" instead of water, as on Tuesday.

Now, the query is, Was this a case of cantharides-poisoning? If not, what was it? If she was poisoned by absorption from the blister, why were the symptoms delayed from Thursday evening to Saturday noon, at least thirty-six hours after its final removal?

Excepting some neuralgic pains, she has been in good health since that time, now over six months ago.

I would be glad to have any of the readers of the GAZETTE enlighten me as to the nature of the above case.

Very respectfully yours,

E. H. BIDWELL, M.D.

VINELAND, N. J.

HEMICRANIA TREATED BY FLUID EXTRACT OF TONGA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN,—I usually have two to three cases of hemicrania every year in my practice, and heretofore I have had no trouble in curing all my cases either with large doses of sulphate of quinine, or other remedies used in such cases, such as bromides of potassium, sodium, or ammonium, gelseminum, sulphate of nickel, croton-chloral, or morphine, as seemed specifically indicated.

But recently I treated a severe case, in a young woman aged 26, of two months' standing, during which time I gave alternately all of the above remedies a fair trial, though none seemed to do any good. She was free from pain only while under the influence of hypodermic injection of morphine.

This being rather a severe case, perhaps I had better give the leading symptoms, as then a proper diagnosis can be made. The pain commenced gradually in the right half of the head, but in a few days the paroxysms became very painful, accompanied with slow circulation, cold skin, oculo-pupillary and caloric disturbance. During a severe paroxysm the pain, as the patient expressed it, was of a constricting character, covering the entire right side of the head, which would be increased by pressure. There was more or less nausea and vomiting; appetite indifferent. During a severe paroxysm there were hallu-

cinations present, the patient hearing noises in the ear, seeing sparks of fire, wanting to go somewhere, or expecting some one to come. During the remissions she would feel nearly free from pain, as long as she was quiet. The secretions and excretions were normal. No organic disease in any part of the system.

After having used all the leading remedies, I picked up a copy of the *THERAPEUTIC GAZETTE*, in which I noticed a number of such cases treated by the fluid extract of tonga. Having it in my office, I prescribed in 30 minim doses every three hours, giving three doses of the tonga every twenty-four hours.

The patient took nine doses, which effected a radical cure, and recovered rapidly. I report this severe case for the benefit of others.

JOHN A. HENNING, M.D.

GARNETT, KANSAS.

Notes and Queries.

BUISSON'S TREATMENT OF HYDROPHOBIA.

Centres have been established in various parts of London and in a few provincial towns for carrying out M. Buisson's treatment of hydrophobia. The wound is washed with a solution of ammonia; the patient has a daily vapor-bath at a temperature of 42° to 48° Réaumur, with a view to producing profuse perspiration for seven consecutive days, and draughts of a hot infusion of borage, also with a view to promoting the diaphoresis. Dr. Buisson is said to have cured himself after the development of the symptoms of hydrophobia. He and his disciples regard the method as an infallible preventive of hydrophobia, and as an equally certain cure, if begun on the first day of the developing disease; on the second day its effect is less certain, and later it has no effect in staying the course of the malady. As to the merits of the treatment we can assert nothing. It is alleged to have prevented or to have cured the disease a hundred times. But the sources of fallacy are innumerable. We do not yet know the proportion of individuals bitten by a mad dog who become the subjects of hydrophobia. It is difficult to conceive that profound sweating can stay the course of a disease which seems to be due to the development of a living germ in the medulla oblongata. That washing a recent wound with liquid ammonia and making the individual perspire profusely should be able to prevent the disease can be reasonably conceived.—*Lancet*, April 3, 1886.

THERAPEUTICS OF TRICHINOSIS.

The value of glycerin in the treatment of trichinosis has been repeatedly alluded to in the *GAZETTE*. FIEDLER noticed several years ago, in the preparation of microscopic specimens, that trichinæ and their embryos died at once when brought in contact with glycerin (even if diluted with two to three times its quantity of water). This was evidently the result of the hygroscopic power of glycerin, causing the abstraction of water from the parasites. This fact led Fiedler to treat animals, fed purposely with trichinous meat, with glycerin, but he did not obtain any positive results. Later he exhibited glycerin in several cases of trichinosis in man, and was successful. Mercel also published a case of trichinosis cured by glycerin, so that the profession regards this drug justly indicated in this affection.

In the *Deutsches Archiv für Klinische Medizin*, vol. xxxvii. No. 12, Fiedler recommends the hourly administration of a tablespoonful of pure glycerin in trichinosis, though only in graver cases, as large doses of the drug may produce hæmoglobinuria and other toxic symptoms.

In this instance the employment of Unna's keratine pills, or keratine capsules, which dissolve only in the small intestines, would appear very appropriate. To complete the abstraction of water from the parasites, Fiedler advises to give large doses of alcohol and to prescribe a rigid dry diet. Glycerin may also be injected into the rectum. A powerful purge, though, is to precede all these therapeutic measures.

THE USE OF LANOLIN IN OINTMENTS.

At the meeting of the College of Physicians of Philadelphia, held April 7, 1886, DR. THOS. G. MORTON (*Med. News*, May 8, 1886) made some remarks on lanolin, and exhibited a few specimens of this preparation from the wool of sheep. Those who have used it have been much pleased with its employment in the preparation of ointments for external application. It can be readily rubbed into the skin and produces no irritation, and, therefore, would probably be valuable in massage. It is probable that substances combined with lanolin will be more readily absorbed than if prepared with other bases.

One of the remarkable properties of lanolin is that it can be readily combined with water. It takes up more than its own weight of water. Unna states that cooling ointments should

contain large quantities of water. Dieterich, with a view to determining the quantity of water taken up by different salve bases, experimented with twenty-one different bases at a temperature of 15° C., taking for each experiment 100 parts of the base. His results were as follows: Cosmoline took up 4 parts of water; lard, 15; benzoinated lard, 17; and lanolin, 105.

Lanolin, as it now appears in the market, is a perfectly neutral base, and hence is not apt to decompose any medicament which may be added. Lassar experimented with it on four hundred patients, and states that lanolin is readily absorbed by the skin, does not produce any irritation, and permeates the lower layers. Bachmann rubbed a ten per cent. iodide of potassium ointment, made with lanolin, into the skin for five minutes. After the lapse of half or three-quarters of an hour, iodine was detected in the urine. The elimination of the iodine by the urine continued for fourteen days after several applications of the ointment. Lanolin was used by the ancients, and is mentioned by Ovid, Herodotus, Plinius, and Aristophanes.

Liebreich patented his process in the United States in January, 1883, and it is concisely stated as follows:

"He takes the suds from the washing of wool in the mill, submits it to the action of a centrifugal machine which separates the soapy, oily suds from the dirt associated therewith, decomposes the suds by an acid, whereby the acid and the saponifying alkali unite and the saponified wool-fat is separated, combined with about one hundred per cent. of water; this is then thoroughly washed with cold water, then heated so as to separate the water and the wool-fat, and again combined with a definite proportion of water, and lanolin is the result.

"Or, he treats wool with alkaline water, producing his suds in that way, and then proceeding as already outlined.

"A much quicker and less complex way of making the article is to treat the wool directly with petroleum benzine; distil off the benzine, and the wool-fat remains; combine this with a proper proportion of water, and lanolin results. In his patent specifications, Liebreich speaks of this process, but says it is objectionable because of the difficulty of getting rid of the benzine odor.

"Merino wool, clipped without the sheep being washed, contains, it is said, the enormous proportion of sixty per cent. of this fat.

"When it is considered that all wool aver-

ages about forty-five per cent. of its weight of this fat, that it has all to be removed before the wool can be manufactured into fabrics, that up to this time it has had no value, that the process for its extraction is not a very expensive one, and that lanolin is thirty per cent. water, it appears reasonable that lanolin will certainly be as cheap as lard as soon as competition in methods of extraction and in supplying have an opportunity to affect its price."

Dr. Keen remarked that he had used lanolin in several instances during the last week or ten days. One case was that of a child, 8 years of age, with an enlarged gland under the jaw, the size of an English walnut. He prescribed iodine, 2 grains to the drachm of lanolin. He saw the child a week ago, and the swelling had almost entirely disappeared. This was a more rapid disappearance than he had ever seen from other iodine applications. This is the only case in which he had any results, although he had used it in a number of instances, and liked it very well.

FOOD PRESERVATIVES.

An interesting paper was recently read by MESSRS. SULMAN and BERRY before the Chemical and Physical Society of University College; it was important also from its practical bearings on the preservation of foods, and especially milk. Their investigation, limited to the boracic, salicylic, and benzoic compounds, proved that such substances as aseptin, glacialine, and boroglyceride owed their preservative qualities almost exclusively to the free acid contained in them. Boroglyceride contained twenty-five per cent. of the genuine boracic ether of glycerin, and seventy-five per cent. of free acid and glycerin in equivalent proportions. The true compound, the ice-like solid, is immediately resolved into free acid and glycerin by the addition of water, and this reaction probably takes place when the true compound comes into contact with aqueous liquid or animal tissue. We agree with the authors of the paper that the use of so much free boracic acid is undesirable and injurious, especially as a preservative of milk for children. Salicylic acid and salicylates are not substances that can be used with impunity, and as they appear to be useless as preservative agents, their rejection is doubly necessary. Again, benzoic acid precipitates the casein of milk. The best agent appears to be benzoate of sodium, which is tasteless when pure, is one-third more power-

ful than boracic acid, and innocuous when taken in small quantities for prolonged periods. —*Lancet*, April 10, 1886.

ON SAPONIMENTS.

The chemical factory of Dietrich, in Helfenberg, near Dresden, has, as we have learned, brought recently into the market a line of new preparations called saponiments, or medicinal opodeldocs, which are intended to compete especially with the medicinal soaps. As the base of these saponiments Dietrich uses neutral oil and stearine soaps prepared by dialysis. These soaps are dissolved in acetic acid and incorporated with such medicinal substances as are mostly used in the dermatological practice. The saponiments can be prepared in the shortest time, and in the smallest quantity,—are more constant than soaps, and contain the active principles in a more concentrated manner than these. In acute inflammatory diseases of the skin the saponiments cannot be employed: their proper place is in chronic, squamous, pruriginous, and parasitic dermatoses, in acne, ichthyosis, and especially in the affections of the hairy skin.

THE METRIC SYSTEM.

We have always made it a rule in making our abstracts of papers from foreign journals to convert the metric system into apothecary's measure: sometimes we have overlooked this, and to facilitate this conversion in the future, we call attention to the following rules published by DR. OTTO A. WALL in the *National Druggist*, May 7, 1886. Dr. Wall claims that rules for converting grains into grammes or *vice versa* with mathematical exactness are superfluous under all ordinary circumstances; for when exactness is really desirable, it can be better secured by referring to tables of equivalent quantities, and when it is not necessary, these rules are too cumbersome and tedious for practical use.

Equivalents of Fluid Measure.

15 minims	= about 1 cubic centimetre.
1 fluidrachm	= about 4 cubic centimetres.
1 fluidounce	= about 30 cubic centimetres.
1 pint	= about 0.5 litre, or 500 cubic centimetres.
1 quart	= about 1 litre, or 1000 cubic centimetres.

Equivalents of Weights.

1 grain	= about 0.06 gramme, or 6 centigrammes.
15 grains	= about 1 gramme.
1 drachm	= about 4 grammes.
1 troy ounce	= about 30 grammes.

For use in constructing a metric prescription, it becomes necessary to adopt some easy rules for conversion from apothecary's to metric weights. The simplest method is as follows:

Multiply ounces by 30 to get the number of grammes. Multiply drachms by 4 to get the number of grammes. When there are less than 60 grains, divide by 15 to ascertain the number of grammes. If there is a remainder, or if the number of grains is less than 16, we may reduce to fractions of a gramme, as follows:

Assume the gramme (written 1.00 Gm.) to be equal to 15 or 16 grains. To convert any number of grains less than 16 into centigrammes, think what fraction that number is of 15 or 16, as may be most convenient, and then take that fractional part of 1.00 gramme to express the metric equivalent, ignoring fractions beyond the second decimal place.

The following will make this clear:

1 grain	= $\frac{1}{16}$ of 16 grains; $\frac{1}{16}$ of 1.00 gramme = 0.06 gramme.
2 grains	= $\frac{2}{16}$ of 16 grains; $\frac{2}{16}$ of 1.00 gramme = 0.12 gramme.
3 grains	= $\frac{3}{16}$ of 16 grains; $\frac{3}{16}$ of 1.00 gramme = 0.20 gramme.
4 grains	= $\frac{4}{16}$ of 16 grains; $\frac{4}{16}$ of 1.00 gramme = 0.25 gramme.
5 grains	= $\frac{5}{16}$ of 16 grains; $\frac{5}{16}$ of 1.00 gramme = 0.33 gramme.
6 grains	= $\frac{6}{16}$ of 16 grains; $\frac{6}{16}$ of 1.00 gramme = 0.40 gramme.
8 grains	= $\frac{8}{16}$ of 16 grains; $\frac{8}{16}$ of 1.00 gramme = 0.50 gramme.
9 grains	= $\frac{9}{16}$ of 16 grains; $\frac{9}{16}$ of 1.00 gramme = 0.60 gramme.
10 grains	= $\frac{10}{16}$ of 16 grains; $\frac{10}{16}$ of 1.00 gramme = 0.66 gramme.
12 grains	= $\frac{12}{16}$ of 16 grains; $\frac{12}{16}$ of 1.00 gramme = 0.75 gramme.

Or we remember that a grain equals 0.06 gramme, and multiply this by the total number of grains. For instance, 20 grains = 20×0.06 gramme, or 1.20 grammes; 35 grains = 35×0.06 gramme.

CASE OF RUPTURE OF THE LIVER IN WHICH PARACENTESIS WAS PERFORMED SUCCESSFULLY.

As recoveries from rupture of the abdominal viscera are extremely rare, the following case, which seems to be clearly of that nature, reported by MR. LOUIS FITZPATRICK in the *Australasian Med. Gaz.*, April, 1886, is of interest. The case was that of a man aged 26 years, by occupation a laborer, who was run over by a wagon loaded with heavy stones, supposed to weigh in all about two tons. The wheel of the wagon passed over the limb, and in its progress severely crushed the shoulder-joint, broke from four to six ribs, passed over the region of the liver, slightly fracturing the top of the crest of the ilium. When Mr. Fitzpatrick saw him, he was suffering great pain, and was in a state of collapse from shock, and all the first day suffered from very severe pains, which he de-

scribed as being like the cramps of cholera. These were relieved by opium. On the second day the abdominal pain became intense, the temperature rose, and the eyes and body jaundiced; the urine dark and fæces white. The patient also vomited large quantities of bile. On the third night the symptoms of traumatic peritonitis became very marked, and although opium and hot fomentations appeared to relieve the pain, the abdomen was considerably enlarging; at first it was tympanitic, but became entirely dull, bulged out at the flanks, and fluctuation could be distinctly felt on movement. Mr. Fitzpatrick concluded from these symptoms that there must be a rupture of the liver, with an escape of bile into the peritoneal cavity, and he therefore performed the operation of paracentesis six days after the accident. Eight quarts of a bilious fluid containing flakes of lymph were drawn off by the aspirator; he was then bound up with hot bandages and kept very quiet. The rent in his liver or gall-bladder, wherever it may have been, soon healed, as the jaundice began to fade and the bile to appear in the stools. The urine became healthy, the skin clear, and six weeks after the accident he left the hospital well.

In this case the rupture must almost certainly have been in the gall-bladder, but the fluid drawn off in the peritoneal cavity was almost entirely free from blood, and if the rent had been in the substance of the liver, which is a highly vascular organ, there must have been very considerable hemorrhage.

PROCESS FOR LANOLIN.

Lanolin, obtained from the alkaline water-washings of wool, is a fatty body consisting of varying proportions of cholesterin and fat-acids, with which is incorporated a certain percentage of water, which, becoming quickly absorbed, forms a smooth, white, homogeneous, unctuous mass. GAWALOVSKI proposes a new method for its preparation, as follows:

The wool-washings are first passed through a fine sieve to free them from mechanical impurities, and then through a convenient quantity of cut-straw or sawdust; the solution is then treated with magnesium sulphate, and the resulting magnesium soap, containing also the cholesterin, is collected, well washed with water, then drained and allowed to dry by exposure to air. It is then treated with sufficient diluted hydrochloric acid to decompose the soap; a large excess of hydrochloric acid should be avoided, but sufficient added

until a slight excess of acid is indicated, which is afterwards removed in the process. The resulting fatty scum, consisting of fatty acids and cholesterin, is drained and treated with petroleum benzine in a closed vessel, slightly warmed to about 85° F. to aid solution, and then filtered through flannel in a closed filter press. The petroleum benzine is then driven off by evaporation or distillation, and to remove any remaining traces of hydrochloric acid the residue is treated with from one-tenth to one-fourth per cent. of carbonate of magnesium, rubbed up with water, the mixture being then well washed with fresh portions of water until the water-washings are no longer milky from the presence of magnesium carbonate. It is again melted, filtered while hot through flannel, and, when cold, water is incorporated and the lanolin becomes white, hard, and smooth.—*Western Druggist*, May, 1886.

ACUTE ARTICULAR RHEUMATISM IN A MOTHER AND HER NEW-BORN CHILD.

DR. SCHAFER, of Pankow (Berlin), reports in the *Berliner Klinische Wochenschrift* of February 1, 1886, the following interesting case of a simultaneous rheumatic attack in a mother and her new-born child: Mrs. N., æt. 35, was seized a few days previous to her confinement with inflammatory rheumatism, attacking the left hip-joint and the right wrist. The child was born while the mother was still feverish, and fully under the influence of the rheumatic intoxication. Three days after birth a rheumatic swelling of both ankle-joints was noted in the child, together with a rise of temperature. Later the hip- and finger-joints became likewise affected, leaving no doubt as to the correct diagnosis. The child was treated with minute doses of salicylate of sodium, but without success; the medicine besides had to be soon discontinued on account of the gastric irritation it produced. After three to four weeks both mother and child improved.

There can be not the slightest doubt that we have to deal here with a case of acute articular rheumatism in a new-born child, contracted by infection from the mother in intra-uterine life. This case of infection is particularly interesting, as it tends to confirm the assumption, first pronounced by Edlefsen (Wiesbaden Congress), April, 1885, that rheumatism must be classed with the affections of an infectious nature. Neither in Henoch's

nor in Gerhardt's text-book on diseases of children can we find a single case of this kind reported, which is proof enough of its exceptional nature. In the *Lancet*, however (1882, p. 804), Ernest Pocock reports a case resembling very closely the one published by Schafer.

DANGEROUS ANTISEPTICS.

The value of an antiseptic is naturally proportionate to its influence as a destroyer of animal or vegetable life, but this is not the only test of its applicability in surgery and medicine. Some agents, though perfectly efficient as deodorizers or disinfectants, have been to a large extent superseded on account of their disagreeable smell, while others—and this is the class to which we wish to direct attention—have to be used with great care, on account of their liability to become absorbed and give rise to toxic symptoms. Three of the best-known and most popular antiseptics are included in this category, viz., carbolic acid, iodoform, and corrosive sublimate. All three are liable, when used as lotions or irrigations, to be absorbed and give rise to very distressing symptoms, and in some cases even to a fatal result. Corrosive sublimate is of comparative recent origin as an antiseptic, and is without doubt one of the most powerful agents at our command for this purpose. It is, however, like the others, liable to absorption, and owing to its intensely poisonous character the most untoward effects occasionally result from its use. In a recent number of the *Nouvelles Archives d'Obstétrique et de Gynécologie*, DR. LUCIEN BUTTE has taken the trouble to collect the notes of some twenty cases of puerperal diseases in which the employment of the *liqueur de Van Swieten* (a 10% solution of the perchloride) was attended with fatal results. From the rapidity with which fatal intoxication took place in most of the patients, the characteristic salivation and gingivitis were absent, and in several the cause of death was not suspected until revealed at the post-mortem examination, the abdominal pain and diarrhoea being attributed to puerperal causes. The symptoms generally presented themselves within from twenty-four to forty-eight hours, and rapidly led on to collapse. The effects were more marked in patients of a debilitated or cachectic constitution, and lacerations of the cervix or perineum or ulcerating surfaces seemed to favor absorption to a marked degree. With these facts before us, it becomes

desirable to use the perchloride of mercury with great caution, even in extremely dilute solutions, and especially to watch attentively for any indication of its absorption. The absence of some of the characteristic symptoms in those very cases where from the rapidity of its action it is particularly dangerous, together with the liability in puerperal cases of mistaking its symptoms for those incidental to the condition of the patient, render it a dangerous agent, notwithstanding its usefulness, and if an antiseptic can be found which will afford as satisfactory results apart from the risk of toxic effects, it would doubtless promptly take the place of the sublimate.—*Med. Press*, May 12, 1886.

FRANCISCEINE.

Francisceine, according to the *British and Colonial Druggist*, is proposed as the name of a new alkaloid which has just been extracted from the Brazilian manaca root, the produce of the *Franciscea uniflora* and certain other species. The principle in question has a very powerful purgative and diuretic action, and is also possessed of diaphoretic and emmenagogue properties.—*Lancet*, April 10, 1886.

THE USE OF LACTATED FOOD.

DR. J. MILNER FOTHERGILL writes concerning lactated food, which is said to consist of the purified gluten of wheat and oats, with barley diastase and malt extract combined with a special prepared milk-sugar.

Such a food can be added to milk. So prepared with milk it forms an admirable food for infants and dyspeptic persons who require very digestible aliments.

But it has a wider range of utility. The body-temperature is kept up by the combustion of grape-sugar. Grape-sugar is supplied from carbo-hydrates, either the insoluble starch or the soluble sugar. Starch forms a great portion of our food, and is converted into grape-sugar within the body. Where the system is unequal to the digestion of starch, as in feeble digestion or conditions of acute disease, then predigested starch must be furnished to the organism. Otherwise the system will perish of exhaustion, just as a fire dies out when its fuel is consumed.

Beef-tea contains nothing which can form grape-sugar, and, in fact, is a pleasant stimulating beverage or food adjunct, but without food value practically. (For what food value it has is so infinitesimal that it is not worth

counting.) But when it has added to it a food such as lactated food, it has a distinct measurable food value. Consequently, such food should be given with beef-tea, and the compound forms a valuable food.

When lactated food is placed in water hot enough to be sipped, a rapid transformation of the starch remaining in it (by the diastase it contains) goes on; and a nutritive fluid is the result which requires but a minimum of the digestive act.

Such fluid can be flavored and drank as a nutritive beverage, specially acceptable in febrile conditions. Flavored with lemon, ginger, cloves, or other flavoring agents, to give variety,—a matter far too much neglected in the treatment of the sick,—it can be largely used. Or wine, either red wine, as claret, or sherry or port, can be added to it when a little stimulant is required, and brandy when a stronger stimulant is indicated.

The resort to farinaceous matters, predigested, must become greater and greater as our knowledge of digestion and its derangements waxes larger. It is not merely in the case of feeble infants that such predigested starch and milk-sugar are indicated and useful; persons of feeble digestion require these soluble carbo-hydrates, which they can assimilate.

But an equally great matter is the feeding of persons acutely sick, and especially where there is pyrexia, who now are allowed to perish of inanition on the mistaken conviction that beef-tea is a sustaining food. It is in the sick-room that soluble carbo-hydrates have a great future before them.

VICARIOUS MENSTRUATION.

The subject treated of in DR. BARNES'S able paper read before the British Gynæcological Society on the 14th ult., has always been one of great interest. The phenomena associated with it have not always been easy to accurately appraise, they have not been of frequent occurrence, and there have generally been present accompanying circumstances that have prevented the thorough and scientific study of them.

So much has this been the case that the condition itself has been doubted, and that by a no less keen and distinguished observer than Dr. Wilks. Perhaps a good deal of the obscurity would be removed by a clear definition of the term vicarious menstruation. If by this is meant the monthly discharge of a

menstrual fluid, we shall have to deny, with Dr. Wilks, that there is such a thing as vicarious menstruation; but if it is taken simply to mean a monthly discharge of blood taking the place of that from the uterus, many of our difficulties vanish. Dr. Barnes accepts the old definition,—*Menses per vias insolitas erumpentes; menstruatio vicaria*; as also the rendering by Leishman, "the menstrual molimen is relieved by a discharge through an unwonted channel." Dr. Barnes himself "proposed the term 'ectopic menstruation' to express the idea of menses escaping at the wrong place." We think the designation a happy one; but as yet it has to gain possession of the field. If in this definition we take the term menses to mean nothing more than a monthly flow of blood, vicarious menstruation becomes an entity about the existence of which there can be no doubt.

One of the factors in its production is increased vascular tension, manifested by turbulence of the capillary and venous system, and by the sphygmograph; the other is some obstacle to the flow of blood from the proper organ, as in the case of menstruation with absence of uterus. These cases of menstruation with absence of uterus are among the clearest cases of vicarious menstruation. Dr. Aveling seems to think not. *En passant*, we may remark that our author is a sturdy defender of the ovarian, or rather ovular, origin of menstruation.

An opportunity of generalizing is rarely neglected by Dr. Barnes, and in the present paper he acts up to this manner. To his mind menstruation is represented, in its various stages, in pregnancy, abortion, labor, and lactation. "These hemorrhages," he says, "have one characteristic in common. They are conservative in design and probably in effect." He might have generalized further, and we think it a pity he did not. He might have cast his eyes over what we are pleased to call the "lower" mammals. They do not menstruate, and thus have none of these "hemorrhages conservative in design and probably in effect," and as far as we can see they are none the worse for it. An explanation on this point is much needed. It is true that as a rule the females die early, but as a matter of fact so do the males, so that the want of conservative hemorrhages can scarcely be charged with their early doom. Leaving other classes of mammals out of the question, however, if they can with propriety be left out when they have almost everything else in common with ourselves, there really seems to be a good deal

of truth in the view he advances. "There is," he says, "a solidarity in the organism, binding the constituent organs with unity, and making them work with one consent." From this menstruation is not simply a function of the uterus and ovaries, but of the system, the due performance of which is necessary to the well-being of the individual. "If, then, menstruation is not carried out in the ordinary way . . . an attempt . . . will be made (1) by ectopic discharges of blood, (2) by discharge of mucous serum, (3) the material will be used up in other functions . . . (gestation, lactation), (4) building up new tissues . . . fat or other aberrant forms of metabolism, (5) effusions into the connective tissue, serous cavities, or in the substance of organs, (6) by exciting various neuroses." Among routes chosen for vicarious menstruation are the stomach (hæmatemesis), the nose (epistaxis), the skin ("a true bloody sweat," the bumps of erythema nodosum, ulcers, blood from sweat-glands, nipples), the conjunctiva, the intestines (diarrhœa and piles). All these forms are illustrated by numerous interesting cases.

His views are fairly, if not fully, summed up in his conclusions: "That as menstruation is a physiological necessity, so when the function cannot be performed in the ordinary way, some substitute for it must be found or mischief will ensue.

"Vicarious or supplementary functional action is a fundamental law in physiology.

"There is nothing exceptional in vicarious menstruation. Vicarious menstruation may occur under many phases. It is conservative in intent and action, lessening or averting evil."

In the discussion that took place on the paper there was very little diversity of opinion expressed. Drs. Bantock, Grigg, Ralfe, Heywood Smith, and Murphy all agreed that a discharge of blood occasionally takes place at more or less regular intervals from parts of the body other than the uterus, either along with menstruation or alternating with it, or in amenorrhœa. That the blood when discharged is true menstrual fluid was not affirmed. Dr. Heywood Smith denied that it is, and Dr. Barnes, in reply, admitted that it is not. For our part, we do not profess to know what true menstrual fluid is, or, indeed, whether there is a true menstrual fluid at all.

Perhaps the subject is not of great clinical importance, but it is of interest from a speculative point of view. Practically we are inclined to agree with Dr. Heywood Smith, when he says he does not believe in the life and

death necessity for the performance of the function of menstruation.—*Med. Press*, May 12, 1886.

PITYRIASIS AND PHTHISIS.

Every physician is familiar with the cutaneous eruption occurring frequently on the chest and back of phthisical patients, which passes under the name of pityriasis versicolor, or chloasma, and the fact that it is due to the presence of a fungus allied to those which cause favus and ringworm is well known; but no one has at present suspected that its presence had any significance, or that it had any real connection with the essential lesion of phthisis. It was regarded as a fungus which took advantage, so to speak, of the exhausted and debilitated condition of the patient to take up its abode in his skin, and it occurs in other wasting diseases of a similar nature. That it is contagious and can grow on the healthy skin is shown by the story which is told of the French pathologist Lancereaux, who, wishing for a drawing of the fungus for his plates on pathological anatomy, took some skin scrapings in an envelope in his pocket, and was surprised after a time to find a plentiful crop of the parasite not only on his own chest but on that of his wife. But the fungus has now come before us in a new light as playing a prominent part in the production of tubercular phthisis. According to the researches of MM. Duguet and Héricourt, the results of which were given to the Academy of Sciences on April 19, certain cases of acute tuberculosis presented no bacilli or zoogloea forms; but when the tissues were treated with potassium (ten to forty per cent.), a delicate mycelium allied to that of microsporon was discovered; and on pushing the inquiry further it was found that this mycelium was more frequently present than the bacilli, being seen not only in the tubercles but also in the neighboring healthy tissue. Similar mycelial threads can also be found in the expectoration mixed with the bacilli. When the microsporon furfur is cultivated and injected into guinea-pigs and rabbits, these animals become, without exception, tuberculous, and the same result is obtained by insufflation into the trachea of the crusts of pityriasis. Moreover, the cultures of microsporon furfur, of tubercle produced from the fungus, and those from tubercles of man are precisely the same in character. Cultivations can be made in slightly alkalinized bouillon or in milk, when it becomes possible to distinguish an aerobic

and an anaerobic element. The former floats at the surface, and at a temperature of from 30° to 38° C. forms a thick membrane composed of bacilli. The latter is found at the bottom of the cultivation-tube as a mass of granulations and mycelium. The polymorphic character of the tubercle bacillus is thus manifest, and the opinion of Spina receives support as to the variety of the forms of microbes in tuberculosis. The whole question is an interesting one, and it cannot be said to be yet settled whether the various forms of low vegetable life to which we assign names are not phases in the life history of one species modified by chemical and physical conditions. The authors regard their discovery as important from the possibility of obtaining an attenuated virus.—*Lancet*, May 8, 1886.

ADONIDIN.

This glucoside is prepared by macerating the plant *Adonis vernalis* for ten days in hydrated alcohol (alcohol 1 part, water 2 parts). The resulting tincture is precipitated by lead subacetate. It is then filtered and condensed and treated with tannin and a few drops of ammonia, which produces adonidin tannate, which is then washed with water and decomposed with zinc oxide and alcohol. Adonidin results in an impure state, and is purified by successive crystallizations in alcoholized ether. It is a bitter-tasting, amorphous, clear yellow powder, insoluble in ether or chloroform, slightly soluble in water, most soluble in alcohol. Muriatic acid colors it gray, nitric acid yellow, sulphuric acid red. Every part of the plant contains it. Ten kilogrammes of the plant yield two grammes of adonidin. It has all the advantages of digitalis, without its cumulative action.—*National Druggist*, May 7, 1886.

A CLEANLY AND ECONOMICAL METHOD OF APPLYING OINTMENTS.

At a recent meeting of the Manchester Medical Society, DR. BROOKE (*Brit. Med. Journ.*, May 20, 1886) exhibited a number of ointments, prepared with a solid base, composed of cacao butter, wax, and oil, or lanolin, and cast into the form of sticks ("salvesticks"). He had found them particularly useful in making applications to the face and hands, since, their melting-point being high, they did not run at the temperature of the body, as did ointments prepared with the or-

dinary bases; and, when dusted over with powder, they were practically invisible. When covered with Mather's, or Seabury and Johnson's adhesive rubber (waterproof) plaster, they offered a mode of applying remedies to the skin which was more durable than the Unna-Beiersdorf plasters, and less expensive. With this protective covering, they were especially applicable to the treatment of psoriasis by chrysarobin, and possessed several advantages over the methods of Pick, Auspitz, and Besnier, in that the fatty menstruum was preserved; they did not need such frequent renewal; they were more readily applied, and did not cause any disagreeable dragging on the skin and hairs. The fear of staining the clothing was completely removed, and the patient might, moreover, bathe without disturbing the dressing. They were supplied enclosed in small cases, like those used for cosmetics, so that they could be conveniently carried in the pocket.

PHOTOGRAPHING THE UTERINE CAVITY.

According to the *Lancet* for May 15, 1886, a Swiss physician describes a plan of introducing wadding tampons and laminaria tents into the uterus, by which he has succeeded in dilating the organ to such an extent as to be able, by means of reflectors, to get a complete view of the whole cavity in cases of carcinoma, fibrous polypi, fibromata, and endometritis. Not being content with ocular inspection, he has also contrived to obtain photographs of the cavity. New inventions for uterine exploration, medication, and instrumentation are often of a somewhat hazardous nature, but we tremble to think of the future of some female patients if photographing the interior of the uterus should ever become one of the medical fashions of the day.

HON. DAVID A. WELLS's third paper of the series, entitled "An Economic Study of Mexico," now running through *The Popular Science Monthly*, will appear in the forthcoming June number. The series will close with the fourth paper, and it promises, when completed, to be the fullest, as it will unquestionably be the most accurate summary of the real condition of affairs, industrial, commercial, and political, in Mexico, that has appeared since the Mexican war.

— THE — Therapeutic Gazette.

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Original Communications.

THE PATHOLOGY AND TREATMENT OF DROPSY.

BY JAMES BARR, M.D.*

Read at the Liverpool Medical Institution, April 15, 1886.

DROPSY in its widest sense may be defined as an abnormal accumulation of serous fluid in the cellular tissue or in a serous cavity.

It may be either general or local, and, according to the position which it occupies, has received various designations, such as anasarca, œdema, hydrocephalus, pleural effusion

and hydrothorax, hydropericardium and pericardial effusion, ascites, hydrocele, hydrops articuli, acute local œdema, hydrops oculi, ovarian dropsy, hydrosalpinx, etc.

In the ordinary process of nutrition there is a more or less constant transudation of serum from the capillaries, which bathes the tissues in this nutritive pabulum, of which they make use according to their selective affinities, and then it is reabsorbed along with the waste products by the veins and lymphatics.

It is usually asserted that when the balance between transudation and absorption is disturbed dropsy results, so that this condition may be due to excessive transudation or defective absorption. However true these state-

* Physician to the Stanley Hospital, Liverpool; Medical Officer to H.M. Prison, Kirkdale.

ments, the consideration of the conditions under which they arise is much more complex than their broad assertion would seem to indicate. About two-thirds of the weight of the whole body is composed of water, and in the soft tissues of course the percentage is much higher. In health the proportion in different individuals varies, and in disease there may be considerable effusion into the soft tissues before there is any pitting on pressure which would make the condition merit the name of dropsy. In many cases, where I have seen the dry parchment-like skin and contracted features of old age give place to a smooth skin and full rounded features, I have been prepared for the advent of dropsy when the friends and patient were looking upon the appearance as evidence of gaining flesh and returning health. In health the blood-vessels are never fully distended, and the quantity of fluid which they contain is constantly varying. The veins themselves are capable of holding all or more than all the blood in the body. A considerable over-repletion of the blood-vessels may occur without any abnormal transudation, so long as they retain their vaso-motor tone and the velocity of the blood is not materially diminished. In health the quantity of urine secreted often varies very considerably from day to day independently of the quantity of fluid taken in or the amount lost by other sources, and this is due to the varying capacities of the blood-vessels. You all know the diuretic effects, independently of drinking, of hard mental work, and the profuse diuresis which follows an hysterical attack owing to the increased vaso-motor tone.

Not only does this tone and elasticity of the blood-vessels regulate the amount of fluid which they contain, but the elasticity of the tissues is also concerned in regulating or limiting the amount of fluid which transudes into their intercellular spaces. The loss of this elasticity in disease is a potent factor in the production of dropsy, and also an obstacle to our efforts to remove the disease.

Dropsies may be divided into two classes : (1) Those cases in which there is an abnormal transudation from the capillaries without apparent obstruction in the absorbents, such as occurs in inflammations, in vaso-motor paralysis, in anæmia, in Bright's disease, etc. (2) Those cases in which there is obstruction to the return current, whether local or general, such as the occlusion of a vein or lymphatic, portal obstruction from cirrhosis of the liver, or general venous obstruction from mitral or tricuspid regurgitation or obstructive lung-

diseases. The conditions which give rise to these broad distinctions are variously compounded in different cases, and the distinctions are here made more for facilitating clearness of description than for indicating any sharp lines drawn in nature.

When we come to consider the causes of abnormal transudation there are three conditions which must engage our attention,—(a) the condition of the walls of the vessels,—increased permeability ; (b) the condition of the blood and its greater liability to transude ; and (c) the pressure within the capillaries. This last condition we will consider first, as perhaps the most important, and a clear comprehension of it will help us to a better estimate of the value of the others. As the transudation takes place from the capillaries it is the condition of the blood within them with which we are here concerned, but in order to understand this we must take a brief glance at the general physics of the circulation. In a paper which I published in the *Liverpool Medico-Chirurgical Journal*, July, 1883, on the "Pathology and Treatment of Tubal Nephritis," I drew attention to the statical and dynamical conditions of the blood in the production of albuminuria, and extended those views to the production of dropsy. I wish now to follow out this paper much in the same lines there laid down.

There have been numerous calculations of the force of the human heart, but all the estimates can only be looked upon as more or less close approximations to the truth. You cannot attach a manometer to any of the large arteries in the same way you can experiment on the lower animals. Perhaps about the most accurate calculations have been made by Professor Haughton, of Dublin.* In the course of an operation a large artery spurted very freely over the operating theatre in different directions. Dr. Haughton measured the co-ordinates of the maximum range, and thus calculated the velocity with which the blood left the artery. From this and the co-efficient of capillary resistance he calculated the force of contraction of the left ventricle. He estimated the force to be equal to four and a half pounds to the square inch, or a force equal to support a column of blood 9.923 feet high. It is quite beyond the province of this paper to enter into the physiological question of the correct force of the heart, as our object is only to deal with comparative forces arising under different conditions,

* Principles of Animal Mechanics, 1873.

though it may be taken, I think, as a matter of fact, that the force of a healthy adult heart with normal arterial tension is capable of supporting a column of blood of eight to ten feet high. There can be no doubt that this force varies very materially in different individuals. In the same individual in a state of health the range of variation is perhaps slight, but in disease it may be very considerable. The *vis viva*, or energy imparted by the heart, may be represented by the formula $\frac{MV^2}{2} = \frac{1}{2} \frac{W}{G} 2Gh = Wh = GMh$.

Here h represents the height of the column of blood maintained by the force of the cardiac contraction, and it might be supposed that this column would be maintained at the same level, as in the case of a steam-pump set to do a certain amount of work,—irrespective of the resistance. But such is not the case with the heart. I have shown in several of my writings that the force of the contraction greatly depends on the amount of resistance, and when this is greatly lessened the force of the contraction is correspondingly diminished. In cases of copious loss of blood the column h falls rapidly, and the diminution in force may sink below that necessary to carry on the circulation, and so you may have fatal syncope. This no doubt is due to the low tension in the aorta being insufficient to drive the blood through the coronary arteries, and thus the heart is not supplied with a sufficient amount of fuel to enable it to maintain the force of its contraction. This would correspond to the fire going out in the case of the steam-pump. This is a most important point to bear in mind in the treatment of dropsy by purgation, or by rapid removal of fluid by mechanical means; as you may thus, in many cases, so rapidly deplete the arterial system as to arrest the action of a feeble heart. I will have to refer to this part again when I come to speak of treatment.

Thus, low arterial tension lessens the force of the cardiac beat, while high tension raises it so long as the heart is capable of meeting the resistance. This, however, may be so great as to overpower the heart, and tell backwards through the lungs on the general venous system, thus tending to equalize the pressure, and so the arterial column h in this case also falls.

The velocity in the arterial tree depends on the force of the cardiac beat, or, in other words, on the height of the column h (velocity, $V = \sqrt{2Gh}$). If the arteries were rigid tubes, with a given force, the velocity would be simply inversely as the sectional areas of the ar-

teries at different distances from the heart, and the current would intermit with the beats of the heart. In cases of high tension, a considerable amount of the energy is stored up in the elastic walls of the arteries, and this tends to make the velocity more or less uniform. In cases of very low tension the arteries are not much distended, so that they in great part act as rigid tubes, and thus the velocity becomes more or less intermittent.

We have previously seen that in low tension the column h (on the square root of which the velocity depends) falls so that the mean velocity is diminished. Now, this great or total velocity, in cases of high tension, is maintained in the arterioles and capillaries so long as there is no obstruction to the outflow from them into the veins. It is still further augmented in these minute vessels over that existing in cases of tension, for the following reasons: The high arterial tension is mainly induced by the obstruction to the arterial flow through the contraction of the lumen of these vessels, and as the velocity is inversely as the sectional areas, so, with equal forces, the velocity in contracted capillaries is greater than in those which are dilated. If the blood were a perfectly mobile liquid, and free to move without any resistance, the force of the cardiac contraction would be converted into velocity, and there would be very little lateral pressure on the walls of the vessels. But the blood is a very viscous fluid, and there is also considerable resistance to its flow from the capillaries and arterioles, and from the friction against the walls of the vessels; thus the velocity is diminished and the statical condition partly maintained. Part of the work of the heart is thus converted into stored energy in the elastic walls of the arteries. This distention of the elastic walls gives rise to what engineers call a head in the liquid, and this, in turn, imparts further movement to the blood during the interval between the beats, equalizes, and makes the discharge continuous. It is well known that in propelling fluid through rigid tubes a considerable amount of the force is used up in friction of the molecules against each other and against the sides of the tubes, so that in about two hundred feet the discharge is reduced to one-fourth.

In elastic tubes this waste of force is very much reduced, and so the discharge is much greater, and when the tube is very elastic there is not much waste from friction. All these physical conditions come frequently into play in the human circulation. When the aorta and large arteries are healthy, and

there is moderate tension, the force of the heart is used in propelling the blood onwards and storing its work in the elastic coats of the vessels, which is again expended in the onward movement of the blood between the beats. When the aorta is very atheromatous it plays the part of a rigid tube, and when the tension is very low the elasticity of the vessel is not made use of, so that the heart is in part wasting its energy in pumping blood into empty tubes. In the former case the heart meets the increased resistance so long as it is capable of hypertrophy, but in the latter case, there being diminished resistance, and no demand for increased force, there is no hypertrophy, and the heart wastes its energy in futile efforts to carry on the circulation, as happens in many febrile affections.

In very low tension, if the heart be at all vigorous, the velocity is increased during the period of systole, and the intermittent pulsations may be carried right through the capillaries into the veins. In proportion as the velocity is increased the lateral pressure is diminished, and so there is lessened interchange between the blood and the tissues. This readily accounts for the rarity of general anasarca in most febrile affections, for, although in many instances the force of the heart is greatly lessened, the resistance is correspondingly diminished, and there is no great lateral pressure in the capillaries; the *vis viva* is converted into velocity, and the statical condition of the blood is lessened.

On the other hand, in many cases of low tension, such as cases of mitral regurgitation, part of the force of the heart is expended in the wrong direction, the veins and capillaries are overfilled with fluid, there is, consequently, an obstruction to the onward movement of the blood, the velocity is diminished, and the statical condition increased, and so we get dropsy.

It seems to me that there is often a great confusion between high arterial tension and the amount of lateral pressure on the walls of the capillaries. It is generally supposed that both stand in a direct ratio to one another, but I hope to show that this is a *non sequitur*. This is a most important point to understand, because in dropsy the effusion takes place from the capillaries, and therefore it is with the condition of the current in them we are immediately concerned in the production of dropsy. High arterial tension may be produced in one or both of two ways: (*a*) by increased inflow from the heart, or (*b*) increased resistance to its exit through the arterioles and capillaries.

No matter how high the arterial pressure, it does not imply increased lateral pressure on the walls of the capillaries so long as there is no obstruction to the flow from them into the veins. The force of the heart is a very varying quantity, and, as I have shown in my papers on reduplication of the heart's sounds,* is directly proportionate to the amount of resistance, so long as this does not exceed the capabilities of the heart. This increased obstruction to the outflow from the arteries calls forth greater force from the heart, the aorta is stretched, the head of the liquid is raised, and so long as the heart maintains this force, and there is no obstruction to the flow from the capillaries to the veins, the velocity in the former is increased. Once, however, the heart is overworked and begins to fail, the blood increases in the venous radicles, and there is increased obstruction to its exit from the capillaries, the velocity is diminished, and the statical condition increased. This is the condition which occurs in the general anasarca of acute Bright's disease, and here the statical condition is further augmented by the retention of fluid within the system, which overfills and distends all the blood-vessels. This may also be expressed by the law that the velocity is inversely as the sectional area. The effect of increased sectional area in diminishing the velocity and augmenting the statical condition is well shown in local œdemas due to vaso-motor paralysis. Here the blood-vessels are dilated, and contain an excessive amount of fluid, which moves slowly, exercises considerable lateral pressure, and so readily transudes into the yielding tissues. It is from the capillaries that transudation takes place, and these conditions clearly explain the absence of dropsy in the early stages of granular kidney, where you have great cardiac force and rapid velocity. We have previously seen that the *vis viva* equals $\frac{MV^2}{2}$, and $V^2 = 2Gh$, so that, when the mass remains constant, any increase in the *vis viva* is converted into velocity, and the statical condition or pressure is relatively diminished. Further, the statical condition depends on sectional areas, because the larger the area the greater the mass and the less the velocity. Hence, under any circumstances the total lateral pressure within the capillaries is greater than that in the arteries or veins, and of course the greater the section of the capillary area the

* *Medical Times and Gazette*, 1877; *Liverpool Medical-Chirurgical Journal*, July, 1882.

greater the lateral pressure within them, but the less the resistance offered to the heart. Professor Haughton has shown that capillary resistance is directly proportional to the length of the tubes, and inversely proportional to the squares of their cross-sections. Resistance tells backwards in the course of the circulation. Obstruction to the flow of blood into the arterioles and capillaries raises the arterial tension, and venous engorgement raises the pressure within the capillaries. High arterial tension may lead to engorgement of the lungs, and pulmonic obstruction to overloading of the systemic capillaries and veins. The blood tends to move in the direction of least resistance, and hence the amount of transudation through the walls of the capillaries will be directly as the statical condition or pressure within them and inversely as the velocity. This leads us up to the question of the relation of the amount of fluid within the vessels to dropsy. Owing to the action of the vaso-motor nerves the arteries are capable of undergoing considerable alteration in capacity. When they are dilated a larger quantity of blood is supplied to the capillaries, the elastic walls of which dilate and allow of a corresponding increase. When there is no defective elimination of fluid from the body, and no obstruction to the flow from the capillaries, there may be no extra filtration through their walls. This increase of fluid in the body may be limited to over-repletion of the vascular system, which may just act as a temporary reservoir. When, again, the vaso-motor nerves contract the arteries and arterioles, the arterial tension is raised, the blood is driven with increased velocity through the capillaries, and consequently the lateral pressure within them is diminished, and so the elastic walls contract and reduce their dimensions. Thus the temporary reservoir is abolished, and its contents may be discharged by an abundant secretion of urine. If there be any defective elimination, the fluid soon accumulates, and from its mere bulk becomes an obstacle to the propulsive power of the heart, the velocity is diminished, and the statical condition increased, and the filtration through the capillary walls is augmented. There is also increased pressure and over-repletion in the venous radicles, and consequently diminished absorption.

Fluids pass very readily through organic membranes, such as compose the walls of the capillaries, by a process of osmosis, but albumen does not thus readily transude. Unlike the capillaries of the lungs and kidneys, the

systemic capillaries allow albumen to pass easily through their walls, so that it is found in all the intercellular fluids. Now, if it does not pass through by osmosis, we must suppose it to be filtered through under varying amounts of pressure. In filtering under pressure, as a rule, the greater the pressure the greater the amount of the filtrate, but the composition of the latter differs very materially from the nature of the compound fluid submitted to pressure, as the different constituents pass through with varying degrees of ease, the water passing much more readily through than the albumen. Hence, although the total amount of albumen passed through may be increased according to the quantity of the filtrate, its percentage is diminished. Hence the greater and more rapid the production of dropsy—if there be no increase in absorption—the less the relative amount of albumen.

The Condition of the Walls of the Capillaries.

—We have seen the varying effects of pressure within the capillaries, and we now come to consider the condition of their walls. The capillaries of the lungs and kidneys are well protected by an epithelial covering, and do not readily allow the passage through them of albumen, but in certain diseased conditions their secretions may be highly albuminous. The systemic capillaries allow of a filtrate of albuminous and watery constituents of the blood, and no doubt this takes place more readily when the elasticity of the vessels is lessened. We have seen how vaso-motor paralysis increases the sectional area of the capillaries, diminishes the velocity, and increases the statical condition of the blood. This augments the difference between its pressure within and outside the capillaries, increased transudation takes place through the more permeable walls, and this goes on until an equilibrium of pressure within and without the capillaries is established. The diminished resiliency of the tissues does not tend to drive the fluid into the veins, in which there is, in this case, more than ordinary pressure.

Under this head may be included the numerous cases which occur in the practice of surgeons from, shall I say, their too judicious treatment of fractures. In many cases of paraplegia you may have no dropsy, while in others there may be extensive brawny œdema and the formation of bed-sores, owing to the involvement of the vaso-motor nerves.

In inflammation there is vascular dilatation and increased permeability of the walls, which give rise to œdema or effusion of fluid into a serous cavity.

The Condition of the Blood itself.—The more watery the fluid the more readily does it pass through the walls of the vessels both by the processes of osmosis and filtration. Some have supposed the more watery the fluid the greater the resistance to its flow along the vessels, but such is not the case. In fact, by diminishing the viscosity, the very reverse should happen. When the blood is very hydraemic, however, the heart is not so well nourished, its force is not so well maintained, and at the same time it is handicapped by the increased quantity of fluid to move along. Hence the blood, although from its quality it may offer less resistance, has less energy, moves with a less velocity, its statical condition is increased, and it filters more readily through the walls of the capillaries. These are the conditions existing in the dropsy of anæmia. Although you have generally got high arterial tension, the vessels are dilated and the force of the heart is very materially lessened, so in the *vis viva* the mass is increased but the velocity is decreased. The blood flows slowly through the capillaries; its lateral pressure within them is increased, and transudation of the watery fluid readily takes place, especially in the feet and ankles, where there is superadded to this general condition the obstruction to the flow from the capillaries into the veins, owing to the action of gravity and the weight of the venous column of fluid.

Dr. Lauder Brunton, in the article on "Dropsy" in Quain's "Dictionary of Medicine," states: "In albuminuria the altered composition of the blood appears to be the chief factor in the production of œdema, as the pulse in such cases may be hard, evidencing arterial contraction and not relaxation." This, in my opinion, is an over-statement of the influence of the condition of the blood. The high tension may overpower the left ventricle, there may be a damming back of the blood in the lungs, and systemic veins obstructing the flow from the capillaries. However, there is diminished excretion of fluid, the blood-vascular system is overfilled, and so within the capillaries there is increased pressure and diminished velocity. There are more ways of accounting for it than merely the watery condition of the blood. However, we will have more to say of this again.

We now come to consider the second main class of dropsies, viz., those due to defective absorption, whether local or general, such as arise from the occlusion of a vein or lymphatic,

or general venous obstruction from mitral or tricuspid regurgitation or obstructive lung-diseases. This forms a large and important class; usually in these cases there is not merely defective absorption, but the obstruction may also give rise to overpressure within the capillaries with increased transudation.

The veins are the chief absorbents, and venous obstruction is a more common source of dropsy than occlusion of the lymphatics.

Although a vein be obstructed, it is possible, if the transudation be very slight, that the lymphatics may absorb the fluid, and so there be no dropsy. On this point, Dr. Lauder Brunton, in his article on "Dropsy" in Quain's "Dictionary of Medicine," quotes the experiments of Ranvier, who found "that ligature of the vena cava in a dog does not usually produce œdema of the lower extremities, but if one sciatic nerve be divided in such an animal, the corresponding leg at once becomes œdematous. The reason of this is, that so long as the nerve is intact the lymphatics can absorb all the fluid which exudes from the capillaries, but when the nerve is divided the arteries dilate, more fluid is passed out than the lymphatics can absorb, it accumulates in the tissues, and œdema ensues. This œdema is not due to paralysis of the limb, but to paralysis of the vessel; for, if the sympathetic fibres through which the vaso-motor nerves pass to the sciatic nerve are divided before they join the motor fibres of that nerve in the sacral plexus, the power of movement remains unimpaired, but œdema occurs just as if the whole nerve had been divided. If, on the other hand, the motor strands of the sacral plexus are cut before they are joined by the sympathetic fibres, the limb is as completely paralyzed as if the sciatic nerve had been cut, but no œdema takes place."

In the case of the dog, there is not much loose cellular tissue in the hind legs, the vessels are well supported by the good tonicity of the tissues, the blood-supply is not great, and, so long as the vaso-motor tone is maintained, even with the vein occluded, the pressure within the capillaries cannot rise very high, perhaps very little higher than that on their external walls. Tying the vein brings the blood in the extremity to a standstill, the vaso-motor nerves contract the arteries, and very little blood enters the limb; the force of the heart or weight of the blood-column acts on a comparatively small mass of blood, and therefore the hydraulic pressure is not greatly raised.

Once, however, the vaso-motor nerves are cut, the vessels are paralyzed and dilated, and the quantity of blood greatly augmented, with a corresponding increase in the hydraulic pressure. When the return of blood from a limb is wholly prevented, the onward movement of the blood is stopped, and the pressure within the tubes becomes a question of hydraulics.

Fluid pressure depends on the depth of the liquid, and, as the statical pressure is equal in all directions, its total sum will depend on the area. When a vein is occluded in a dependent limb, you have the weight of the arterial and venous columns of blood tending to dilate the capillaries, and, as the pressure at any given depth is equal in all directions, the total pressure within the capillaries will be proportionately greater than that within the arteries and veins as their sectional area is greater.

To the statical condition of the blood within the limb you have superadded the force of the heart or the pressure of the arterial blood-column. This may be expressed in so many pounds to the square inch, and so the greater the amount of fluid on which it acts the greater the total pressure. We must see why, in these cases, when the vaso-motor nerves are divided, the pressure is so much greater. These arguments, of course, apply not merely to a limb, but also to any area from which the blood is wholly prevented from returning by the occlusion of the veins.

When the return current is not wholly prevented, such as in portal obstruction from cirrhosis of the liver, the effects are correspondingly less. This also applies to the amount of obstruction to the general circulation from tricuspid regurgitation. I know a case at present where I believe there is total occlusion of the lower part of the vena cava, but the collateral circulation is so well established through enormously dilated superficial veins of the abdomen that there is no dropsy.

Cases of dropsy, arising from obstruction of the lymphatics, are not very common. In cases of lymphangitis, there is considerable brawny swelling, though this is no doubt due to involvement of the capillary blood-vessels. I have seen considerable œdema of a lower extremity arise from inflammation of the lymphatics around the femoral artery. Dr. Whitla lately recorded a very interesting case of chylous ascites arising from perforation of the thoracic duct.*

Various forces combine to carry on the circulation in the lymphatic vessels; the current is very slow, and even in the thoracic duct it is reckoned not to exceed one inch per second. Among the chief of these forces must be mentioned osmosis. The great attraction which albumen has for water must cause an endosmotic current into these vessels, but in cases of œdema, where the effused fluid is highly albuminous, the force of this current must be diminished. The pressure of the muscles and the elasticity of the tissues also largely contribute to the onward movement, and the innumerable valves with which the lymphatics are supplied secures the full benefit arising from these forces. When the elasticity of the tissues is lost, and the activity of the muscles diminished, as in dropsy, there will be a corresponding diminution in the velocity of the lymph current. The thoracic duct discharges its contents into the junction of the left internal jugular and subclavian veins, where the pressure is usually negative, and so each inspiration must contribute to the onward movement of the lymph. Dr. Lauder Brunton thinks that in the pleura and peritoneum, which are now generally looked upon as large lymph-sacs, the respiratory movements play an important part in the absorption of and carrying on the circulation of the lymph. From a full consideration of all these conditions we cannot attribute more to the lymphatics and the condition of the tissues than a passive action in the production of dropsy.

Having now fully dealt with the general question of dropsy, we will consider the etiological factors in the causation of its different varieties. General anasarca, of which we will first treat, is usually supposed to be due to hydræmia, though opinions differ as to how the watery condition of the blood is brought about. Some observers, who are endowed with a very small horizon, can trace all the evil effects of Bright's disease to the loss of the albumen, and imagine that the low specific gravity of the blood-serum is due to the loss of this solid constituent. They fail to see that the blood can be more readily diluted by the addition of water than by the abstraction of its solids.

Bartels, Grainger Stewart, Carter, and a host of others recognize the fact that dropsy frequently occurs when there has been little or no loss of albumen, and they correctly ascribe the hydræmia to retention of water in the system. Dr. Carter† deals fully with the

* *British Medical Journal*, May 30, 1885.

† *Renal and Urinary Diseases*, 1878.

effects of velocity and pressure in the circulation, and shows how the water is not eliminated by the kidneys, but he leaves the question there, and does not show how the transudation takes place into the cellular tissue. The defective elimination of fluid necessarily increases the amount retained in the system, and we have now to consider the mechanism by which it is transuded into the tissues. If you have got several water-taps in connection with the same main pipe in your house, and you turn them all on, the first one or two taps may be able to empty the pipe, and there may be no efflux from the more distant ones. Now, if you shut the proximal taps, the flow takes place from the more distal ones. The flow, in this case, is not immediately due to the closure of the other taps but to the pressure of the liquid. So with the closure of the kidney taps.

In my paper on the "Pathology and Treatment of Tubal Nephritis" I stated,* "In acute Bright's disease the heart's action is vigorous, and at first it is quite able to meet all the demands which are made upon it; the surplus of expulsive power is great, overtops the high arterial tension; the blood is driven with considerable velocity through the contracted and even the most remote arterioles. The function of the kidneys, however, is suppressed; the excess of water is not got rid of by the skin and lungs, hence it accumulates in the blood-vessels, and gives rise to increased statical pressure within them. The pressure soon more than counterbalances the velocity of the blood, and so abnormal transudation takes place into the cellular interstices of the tissues, and probably also, in many cases, into the serous cavities. The pressure, however, is universal, and not simply a pressure occurring in greater degree at the most extreme points of the circulation, as in adynamia, hence the effusion first takes place from the capillaries which are least supported; thus the dropsy usually first appears in the loose cellular tissue of the lower eyelids, from whence it quickly spreads over the whole body. In some cases you may see œdema of the lower extremities during the day, which partly subsides at night, giving place to swelling of the lower eyelids in the morning. If the heart's action fail, you get pulmonary congestion and œdema, which still further obstruct the venous return and increase its results."

Anasarca due to kidney-disease is usually associated with acute Bright's disease, the

large white or fatty kidney, to a less extent in amyloid disease, and it may occur in the last stage of granular kidney when the heart begins to fail. Dropsy occurs most readily in those cases where there is a large retention of fluid, which increases the statical condition of the blood, gives more work to the heart, diminishes the velocity, and causes the blood-serum to transude more readily into the tissues. In the early stage of granular kidney the blood-vessels are contracted, with a corresponding diminution in the mass of blood in circulation, the arterial tension is high, the heart's action vigorous, which imparts great velocity to the blood and carries it not only quickly through the systemic capillaries but also through the kidney, where the surplus fluid is eliminated. Dropsy due to disease of the kidneys commences in the cellular tissue, then extends to the serous cavities, where the vessels are better supported and transudation less likely to occur, and lastly produces œdema of the lungs.

Senator, in his classical work on "Albuminuria in Health and Disease," makes, to my mind, the following extraordinary statement:† "In addition to the fact that dropsy is as constant in the one type (large white kidney) as it is rare in the other (granular kidney), the way in which this symptom makes its appearance is so peculiar that the idea suggests itself that some disease of the skin is concerned in its production.

"It is perfectly evident that the dropsical effusion cannot be referred to suppression or diminution of the urinary secretion, an explanation advanced by some observers. Even the complete interruption of the discharge of urine, which may originate from obstruction in the urinary passages, does not, *per se*, produce dropsy as a consequence. Cohnheim very particularly refers to the fact that neither hydræmia nor hydræmic plethora can be the cause of dropsy in those diseases of the kidney.

"Its proportionately rapid supervention, the great extent of the anasarca, and above all its localization, would rather seem to indicate the existence of special local abnormalities, which Cohnheim is inclined to look for in some inflammatory change of the skin or its vessels. It is in fact difficult, without some such assumption, to explain how it comes to pass that, in the first form of chronic nephritis (and also in acute nephritis), the eyelids or the scrotum are the usual seats of the œdema, and often those which are first affected; for, as

* *Liverpool Medico-Chirurgical Journal*, July, 1883.

† New Sydenham Society's Translation, 1884.

regards these parts, the influence of gravity cannot be a sufficient cause for the appearance of the symptom."

The refutation of these statements ought to be sufficiently clear from what I have previously stated, but I may also add that complete suppression of urine does not necessarily produce dropsy, because there may be no greater quantity of fluid imbibed than is got rid of by other channels. I have seen general anasarca appear and disappear many times in the same case, where there was no alteration in the state of the skin, and the treatment on each occasion consisted mainly in the diminution of the amount of fluid ingested. There may be sufficient pressure within the capillaries to produce oedema without any influence from gravity. When the pressure outside the capillaries is much less than that inside, transudation is apt to take place. I have shown that there is this greatest difference where the capillaries are least supported in the loose cellular tissue of the eyelids, scrotum, etc.

In anæmia the dropsy usually commences in the feet and ankles, or other dependent parts. The conditions present are dilated vessels, high arterial tension, and feeble heart. The dilated vessels increase the mass of blood, and the statical pressure being as the depth of liquid the total pressure within the capillaries is great. To this must be superadded the force of the heart. The effect of position in these cases is very great, for the following reason: When the limb is dependent you have the force of gravity plus the force of the heart, whereas when the limb is raised you get the force of the heart minus the force of gravity. The velocity within the capillaries depends on the force of the heart or height of the arterial blood-column and the sectional area of the capillaries, and as the former is weak and the latter great the velocity is much reduced, and the pressure much increased. Moreover, the watery condition of the blood and diminished pressure outside the capillaries would allow the serum to transude more readily.

I have before sufficiently explained the mechanism of acute local oedemas due to vasomotor paralysis. In the case of dropsy arising from inflammations, such as peritonitis, pleuritis, pericarditis, synovitis, meningitis, inflammation of the soft tissues, etc., the vessels are dilated and become more pervious, the quantity of blood is augmented, the statical pressure increased, and the velocity diminished. The fluid transudes under high pressure, and there is also a considerable amount of coagu-

lable lymph poured out as the result of the inflammation, which forms a coating over the serous surfaces, thus obstructing absorption by the veins and lymphatics.

Dr. Lauder Brunton* says that "accumulation of fluid in the ventricles of the brain, or in a subarachnoid cavity, is chiefly due to compression of the veins of Galen." I think it will be generally found to arise from excessive transudation independently of any obstruction. In cases of chronic alcoholism and chronic Bright's disease there is usually more or less wasting of the cerebral cortex, which is replaced by an excessive amount of cerebro-spinal fluid. This may be readily increased at any time under high pressure, when there is a state of hydræmic plethora. The watery brain becomes compressed with resulting stupor and coma.

In ovarian cysts, hydrosalpinx, hydrocele, etc., the pressure within the capillaries is greater than that on their external walls, hence transudation takes place into the cyst. Immediately after tapping, the hydrostatic pressure within the cyst is slight and effusion takes place rapidly, but as a cyst gets full the greater pressure supports the capillaries and transudation takes place more slowly. Dr. W. H. Stone† found the cyst tension in cases of ovarian dropsy to support a column of water fourteen inches in height, and in one case, where the circumference of the cyst was forty inches, he estimated that this tension force would equal two hundred and sixty-five pounds. In the case of ovarian cysts mere transudation from the capillaries would scarcely account for the thick and highly albuminous character of the fluid, so it is probable that the cyst plays the part of an endosmometer. Fluid is secreted or poured out from the capillaries, and the more liquid portion is re-absorbed, so that eventually a concentrated albuminous fluid is left. The action of an endosmometer would also more readily explain the high tension, which is at least double that of ascites, and which must be the potent factor in the rapid enlargement or growth of the cyst. In many cases of pleural effusion the tension is negative, and contrasts markedly with the condition which we have just described.

Obstructive Dropsy.—Dropsy arising in cases of mitral regurgitation generally begins at the farthest extremity of the circulation, such as the feet, where the velocity is least and hydro-

* Quain's Dictionary of Medicine, art. "Dropsy."

† *Medical Examiner*, Feb. 15, 1877.

statical pressure greatest. In these cases part of the force of the heart is expended in the wrong direction, and there is a corresponding diminution in the onward movement of the blood. There is a general accumulation of fluid in the veins, and obstruction to its flow from the capillaries. In the lower extremities there is also superadded the influence of gravity acting on the weight of the column of blood. In mitral stenosis and obstructive lung-disease the conditions are similar, except that there is no force transmitted backwards from the left ventricle through the mitral orifice.

In cases of tricuspid regurgitation the dropsy not unfrequently begins as an ascites. Here you have not merely, as in mitral disease, overloading of the venous system, which necessarily begins in the most distal veins, but there is a positive forcible backward impulse against the advancing current, which necessarily first tells on the large mass of blood in the vena cava and such main branches as the hepatic veins. The impulse may cause the whole liver to pulsate, and anyhow it obstructs the portal circulation, and may thus give rise to great effusion.

Cases of ascites resemble those of partial occlusion of a vein, and this part has been previously considered.

Hydrothorax and hydropericardium may be the result of excessive transudation from hydræmic plethora, such as that occurring in Bright's disease. They may also arise from venous obstruction owing to the pressure of an aneurism.

In hydropthalmia there is great enlargement of the anterior half of the eye, with corresponding increase in the aqueous humor. Dropsy of the optic disk is probably as a rule due to venous obstruction, and the retinal artery being a terminal one the circulation in the affected tract cannot be relieved by collateral circulation. In detachment of the retina (sub-retinal dropsy) the serous effusion is most probably due to occlusion of some of the choroidal veins.

(To be concluded.)

JAMAICA DOGWOOD AS A HYPNOTIC.

By F. SPENCER HALSEY, M.D., NEW YORK.

THE following is a report of cases in which the fluid extract of piscidia erythrina, or Jamaica dogwood, was used during my service at almshouse and workhouse hospitals during the summer of 1885 :

CASE I.—Bernard S. Large ulcer on foot. Great pain, and very restless at night ; opiates give no relief.

April 20.—Dogwood, 3i, at bedtime ; slept very well ; no untoward effects.

April 21.—Slept all through.

April 22.—Another good night.

April 23.—Dose lessened ; fair results.

April 24.—Repeated first dose ; good result.

CASE II.—Mary D. Phthisis. Unable to sleep on account of cough.

April 28.—Dogwood, 3i, at bedtime ; slept fairly well.

April 29.—Slept well all night.

April 30.—Did not sleep much.

April 31.—Repeated dose ; same effect.

CASE III.—Hannah J. Phthisis.

May 4.—Dogwood, 3i ; slept all night.

May 5.—Rested more quietly.

May 6.—Slept well.

CASE IV.—John R. Alcoholism. Very restless and wakeful.

May 5.—Dogwood, 3i ; slept all night, and awoke refreshed.

May 6.—Slept very well.

CASE V.—John A. Chronic Bright's disease. Has not slept well for five nights.

May 12.—Dogwood, 3i ; slept almost all night.

May 13.—Did not sleep as well.

May 14.—Repeated dose ; no better result.

CASE VI.—Maria F. Alcoholism. Gave dogwood, 3i, night of May 20. Patient slept all night.

May 21, 22, 23.—Repeated dose ; same effect each night ; good night's rest ; and awoke with no unpleasant feeling.

CASE VII.—Henry M. Phthisis. Unable to sleep on account of cough, which is very troublesome. Has tried potass. brom., tr. hyoscyam., and other hypnotics with no good result. On night of June 5 gave dogwood, 3i, with the result that patient slept fairly well ; less cough.

June 6-10.—Gave dogwood each night, during which patient slept well, and was less troubled on awakening than with any other medicine he had taken.

CASE VIII.—William S. Fracture of radius. Unable to sleep on account of pain in arm. Ordered dogwood, 3i, to be given him on night of June 30. Slept all night.

July 1, 2, and 3.—Gave same dose, on all of which nights the same effect was obtained.

CASE IX.—Maggie McD. Compound fracture of the olecranon. Cannot sleep on ac-

count of pain ; very restless. Opium or morphine makes her worse ; bromide has no effect unless given in very large doses. Tried dogwood, 3i, during night of August 2, and found it to work very satisfactorily, patient sleeping nicely all night.

August 3.—Same result.

August 4, 5, and 6.—Slept well all night.

August 10.—Again given ; good sleep.

August 12.—Same result.

CASE X.—Julia M. Syphilis. Considerable pain in both legs ; has not enjoyed a good night's sleep in a long time.

August 10.—Dogwood, 3i ; slept fairly well.

August 11.—3i ; slept all night.

August 12.—Did not sleep as well.

August 13.—Same ; did not sleep until after midnight.

August 14.—3i ; complained of severe pain in head ; no sleep.

August 15.—3ss ; no pain ; less restless.

August 17.—3i again ; slept well.

August 18, 19.—Same result.

August 20.—Repeated dose ; same effect.

CASE XI.—Martin W. Large varicose ulcer on leg. Suffers much pain ; opiates do not affect him pleasantly.

August 27.—He was given 3i of dogwood ; result, he slept very well.

August 28.—Slept all night.

August 30.—Same result.

August 31.—Repeated dose, with same effect.

CASE XII.—Lizzie K. Facial neuralgia. Suffers great pain in the side of her face, the pain increasing in severity. Ordered dogwood, 3ss, morning of August 31, and by afternoon she was much more comfortable ; repeated dose at night ; patient slept fairly well.

September 1, 2, and 3.—Gave 3i doses each night ; patient slept well all night.

CASE XIII.—Edward S. Suddenly taken night of September 5 with severe pains in the abdomen, vomiting, cramps, all pointing to an attack of cholera morbus. I gave him as soon as possible 3ss dogwood, and repeated dose in half an hour. Before the second dose had been taken the cramps had lessened, the pain greatly diminished, and, after the second, he fell into a quiet sleep, from which he awoke the next morning feeling much better.

On night of 7th he was given another dose of dogwood, 3i, and slept almost the entire night through, waking the next morning in a refreshed condition.

CASE XIV.—Henry J. Fell from his bed

night of September 20, and sustained a fracture of two ribs. He suffered considerable pain and uneasiness, and, not wishing to give him morphine, I gave him dogwood, 3i, and had the satisfaction of seeing him a couple of hours later in a deep sleep.

September 21, 22, 23, 24.—Was given dogwood, 3i, on each of these dates, and always with the same result, viz., a sound sleep, and with no unpleasant after-effects.

These few cases, culled from a number of months' experience in hospital practice, have led me to express my opinion as to the value of Jamaica dogwood. I have found it to be a most excellent hypnotic and anodyne ; in no one case of those in which I employed it has it failed to relieve pain and induce sleep. One great advantage connected with it is that patients, after taking it, awake with none of the unpleasant after-effects which opium induces. Not only does it relieve pain and produce sleep, but in many cases it relieves cough, notably the case in phthisis. This experience, though very limited, has induced me to become very much attached to this remedy, and in every case where such an action as comes from its use is indicated I have always employed it with most satisfactory results.

SACCHARIN.*

BY L. WOLFF, M.D.†

UNDER this name a product of the coal-tar derivatives has been recently introduced for medical use. It was first produced by Dr. C. Fahlberg in 1879, who described it, together with Prof. Ira Remsen, in vol. i. page 426, of the *American Chemical Journal*.

To understand the chemistry of saccharin it is necessary to enter somewhat into the consideration of the aromatic group of hydrocarbons from which it is derived.

This series is known by the general formula of C_nH_{2n-6} ; i.e., every member of the group contains for the carbon atoms twice as many of hydrogen less six. The starting-point of this is benzene, C_6H_6 , derived by distillation from coal-tar, and the second member toluene, C_7H_8 , or methyl benzene, also written as $C_6H_5.CH_3$, another distillate from that source.

Toluene treated with sulphuric acid, H_2SO_4 , so that the H adjoining the CH_3 in the hydro-

* Read at the Clinical Meeting of the Philadelphia County Medical Society, May 19, 1886.

† Demonstrator of Chemistry, Jefferson Medical College.

carbon chain will be substituted by SO_2H , yields orthotoluenesulphonic acid, expressed by the formula $\text{C}_6\text{H}_4\text{CH}_3\text{SO}_2\text{H}$.

This converted into orthotoluenesulphochloride, $\text{C}_6\text{H}_4\text{CH}_3\text{SO}_2\text{Cl}$, and treated with ammonia, NH_3 , gives orthotoluenesulphamide, $\text{C}_6\text{H}_4\text{CH}_3\text{SO}_2\text{NH}_2$.

As toluene by oxidation is changed into benzoic acid, so is the toluenesulphamide changed when oxidized with potassic permanganate, KMnO_4 , into benzoic sulphimide, or saccharin, and orthosulphobenzoate of potassium. This mixture, when treated with hydrochloric acid, HCl , leaves a precipitate of benzoic sulphimide, $\text{C}_6\text{H}_4\text{CO}\cdot\text{SO}_2\text{NH}$.

This benzoic sulphimide, if treated with water, gives orthosulphaminbenzoic acid, $\text{C}_6\text{H}_4\text{CO}_2\text{H}\cdot\text{SO}_2\text{NH}_2$, so that saccharin may be therefore properly termed an anhydro-orthosulphaminbenzoic acid.

Saccharin, prepared in this manner, is a white powder, composed of irregular crystals. It is very slightly soluble in water, not quite half per cent. dissolving at ordinary temperatures, while it dissolves readily in warm and boiling water, from which it crystallizes out on cooling. As forming sulphaminbenzoic acid when so dissolved, it has an acid reaction. It is readily soluble in alcohol and ether. Its salts, with the hydrates or carbonates of the alkaline metals, are readily soluble, but saccharin is separated out from such solutions on the addition of acids. Heated to 220°C . it melts, and is partially decomposed, and, when fused with potassic hydrate, it forms salicylic acid. Its most remarkable property, and that which makes it of advantage to medicine, consists in its intense sweet taste, which is so great that one grain if dissolved and neutralized in about ten pints of water (1 to 70,000), can still be tasted, while one grain of cane-sugar can only be detected at the utmost when dissolved in half an ounce of water, so that saccharin is about three hundred times sweeter than sugar, the taste of which it represents entirely in quality.

Professor Mosso has recently studied the physiological effect of saccharin, and published the results in the *Archivio per le Scienze Mediche*, vol. ix., 1886. According to his researches, it is not, like benzoic or salicylic acids, excreted in the urine as hippuric or salicyluric acid, but is found therein in the same chemical condition as ingested. Frogs can be kept indefinitely alive in a neutralized watery solution of saccharin. When injected under the skin, the urine tastes sweet within fifteen minutes, and continues so for several days. Experiments with dogs, when saccharin

is given in large doses, developed no impairment of nutrition, nor was during its use the amount of urea eliminated either increased or diminished. The urine of animals fed with saccharin is less prone to putrefaction. The amount of chlorides in the urine is increased during its use, while the phosphates and sulphates remain normal.

Animals on full diet, along with saccharin, increase in weight. On man, doses of 5 grammes (75 grs.) produce no abnormal effect, and the appetite is stated to be increased during its use. The uropoietic ways are the only eliminative tract for saccharin, which makes itself manifest in the urine half an hour after its ingestion. It may be summed up, therefore, that saccharin is not possessed of any toxic or deleterious effect on the human organism.

In therapeutics this new substance is destined principally as a corrective for the taste of other substances, and as a condiment for the use of persons suffering from diabetes mellitus, and those under treatment for the reduction of obesity.

In several experiments that I have made, I found it to correct the bitter taste of quinine materially if one part of it is added to two parts of the latter. As its solution forms an acid, which readily forms salts with bases, it can be utilized to combine directly with alkaloidal quinine to form a quinine sulphaminbenzoate.

In fermentative disturbances of the digestive tract, when sugar and carbohydrates are contraindicated, it may be used as a corrective for the nauseant taste of other remedies, especially so as it has decided antiseptic powers. It may also be used as a condiment for milk and other nutriments to be taken. To improve the taste of elixirs, wines, etc., it seems especially fitted, as they will under such conditions have the very desirable property of not deranging the stomach. The coffee and tea of diabetic patients may be sweetened with a grain or two of saccharin, and it may also be added with advantage to jellies and other foods for such patients.

That saccharin has a place in medicine and in the dietary list is undoubted, and that it is innocent in its effect commends it especially to a trial by physicians.

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ON THE DISCOVERY OF THE MYDRIATIC ACTION OF THE SOLANACEÆ.

BY DR. RUD. KOBERT.*

THERE can be no doubt that the discovery of the mydriatic action of certain solanaceæ was a matter of great importance for therapeutic practice. Nevertheless, there exists a singular uncertainty, if not confusion, as to the time of this discovery and as to the discoverer himself. In fact, there is not a single book published in German, French, or English, in which I can find reliable data in regard to this matter.†

In order to mend this defect, I beg leave to gather for a historical discussion all pertinent material, which, as may be presumed, is no light task.

The Greeks and Romans understood by mydriasis a condition of visual weakness, together with a dilatation of the pupil. This definition can be found in Paulus Ægineta (iii. 22),‡ Celsus (vi. 6), and Isagoges; and is probably derived from the peculiar condition of visual weakness and pupillary dilatation invariably to be found in glaucoma. Some few authors, as Aëtius, designate improperly, also, other pathological conditions of the eye, such as phthisis bulbi, as mydriasis. In the presently accepted meaning—*i.e.*, dilatation of the pupils§—the word appears to have been first used by Cælius Aurelianus (Chron. ii., p. 344).

The first mention of a mydriasis produced by preparations of solanaceæ|| we find in Galen's third volume of *Methodus Medendi*

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† The statements of A. Hirsch in the History of Ophthalmology (Graefe-Saemisch, Textbook of Ophthalmology, vol. vii. p. 235), appearing to be more trustworthy than those of other authors, have been adopted in the main in this paper.

‡ This interesting passage is rendered by Adams as follows: When the pupil does not appear changed in color, but much wider than natural, and when it sometimes wholly impairs the vision, and sometimes nearly so, and when every object appears smaller, the affection is called mydriasis. The cause of it is some redundant humor.

§ The word pupil, with its present signification, was used by Cicero (*De Natura Deorum*, ii. 57), who derives it from *pupula*, a little doll.

|| The identification of the solanaceæ of the ancients is a difficult and as yet but partially-solved problem, *vide* Sprengel (Ped. Dioscorides de Mat. Med., Lipsiæ, 1829, pp. 602-605), Francis Adams (Paulus Ægineta, London, 1847, ii. pp. 218-19, and iii. p. 290), and Imbert Gourbeyre (*Recherches sur les Solanum des Anciens*, Paris, 1884). For our purposes it is of importance to know that all of the species in question have a mydriatic action.

(Edit. Kühn, tom. x., Lipsiæ, 1825, p. 171). This author states in the second chapter of the quoted volume that grave visual interferences and mydriasis may result by a too intensive local application of drugs containing mandragora or hyoscyamus. Dioscorides and Plinius Secundus do not appear to have known anything of this action, at least these writers never mention it, while mydriasis itself occurs in Pliny, who even mentions an artificial production of mydriasis by the seeds of anagallis. Galen, therefore, is unquestionably the first author who refers to the mydriatic action of two species of solanaceæ. Still, his in every way correct statement appears to have been wholly forgotten, for no subsequent writer ever speaks of this action, which fifteen hundred years later had to be discovered anew.¶

In 1686, Dr. Ray, a famous English physician, reported in his *Historia Plantarum* (vol. i. p. 680) that a lady coming under his observation had placed upon a small ulcer beneath the eye a belladonna-leaf, and had afterwards been annoyed by an excessive dilatation of the pupil. Simultaneously the lady lost entirely the power of the pupil to react on light. The physician regarded this defect at first as a matter of accident, until a repetition of the belladonna application taught him that a dilatation of the pupil and loss of reactive power for several days were the physiological effects of belladonna.

But this second discovery also was again forgotten, although Ray's work was largely read. Thus, Boerhave (1668-1738), however familiar with medical literature, says in his book *De Morbis Nervorum* (p. 371), expressively that the juice of belladonna had no influence upon the eye, while Van Swieten, in his commentary of Boerhave's *Aphorisms* (vol. iii. p. 363), quotes Ray's case. And quite independently of Ray's observation, Evers reported in the *Berliner Sammlung*, 1773, vol. v. p. 565,** that he noticed in six persons *hebetudo oculorum* and *dilatatio pupillæ* as symptoms of the belladonna intoxication. Evers must accordingly be mentioned as the third discoverer of the mydriatic power of belladonna. Three years later the following case of poisoning occurred at

¶ Ebn, Baithar, and Paulus Ægineta, know positively nothing of this action.

** Gmelin states, in his *General History of Vegetable Poisons* (Nuremberg, 1777), p. 301, that already in 1765 he had noticed mydriasis as one of the symptoms of belladonna-poisoning, but he does not appear to regard this symptom as characteristic, but rather as an incidental one, for, in reviewing all symptoms, he omits this one.

Hamburg. A physician of repute, Dr. Reimarus, had ordered in a drug-store belladonna. The nephew of the apothecary, Johannes Andreas Daries (De Atropa Belladonna, Dissert. Inaug. Auctore Petro Joanne Andrea Daries. Lipsiæ, 1776. Reprinted in Ballinger's Sylloge, vol. ii. p. 58), who prepared the prescription from the fresh plant, had a drop of the juice of the berries, or of the herb, accidentally get into his right eye. Very soon after this accident he was troubled by mydriasis and considerable visual interferences. Reimarus, informed by letter of the druggist's trouble, wrote that he was aware that the ingestion of large quantities of belladonna produced mydriasis, but that he was surprised to learn that the external application of the drug could likewise produce this result. This was, however, Reimarus added, a very interesting matter, and invited decidedly to therapeutic trials of the drug in cataract operations. But even before the arrival of this letter, Daries ascertained, by experiments on a cat, that the fresh juice of the herb and of the berries of belladonna had actually a mydriatic power. Hence Daries is to be designated as the fourth discoverer of the mydriatic action of belladonna.

About the same time, or a little later, Doederlein* observed in his practice a case recalling that one of Ray mentioned above. A patient having placed a leaf of datura stramonium upon an ulcer near the eye, was soon affected with a complete paralysis of the pupil. Doederlein interpreted this mydriasis very correctly as the action of stramonium, and is accordingly to be regarded as the fifth discoverer of this action. Independently of him, Schiferli,† following the example of his preceptor Loder, who appears to have found the belladonna action for himself, used and recommended in 1796 an infusion of belladonna for cataract extraction. Loder is consequently the sixth discoverer of this action.

After this time the specific action of belladonna upon the eye became generally known in Germany and in other countries.

Thus, we find it mentioned as something generally known in Tromsdorf's Pharmacological Dictionary (Hamburg and Leipzig, 1802, vol. i. p. 299). The action of hyoscyamus

was discovered by Himly in 1800 from botanical deductions, and was warmly recommended for ophthalmological purposes.‡ Ehlers,§ one of his pupils, translated the publication of Himly in question into French, but, either on purpose or by mistake, always wrote belladonna instead of hyoscyamus, inducing thus the French physicians to employ belladonna therapeutically. In the second French edition, however, appearing 1803 in Altona, the word *jusquiamine* is used instead of belladonna. In England, Paget|| recommended the belladonna application for cataract extraction.

In lay circles, however, the mydriatic action of the solanaceæ was in the beginning of this century still wholly unknown, and was anew discovered by Runge, the discoverer of the aniline colors. This chemist makes, in his *Chemischen Briefen*,¶ the following interesting communication :

"In Jena I became soon acquainted with Döbereiner, and discussed with him my researches about vegetable poisons, especially the solanaceæ. Döbereiner appeared pleased with the methods instituted by me and the results of my investigations ; he constantly stimulated me to new researches. About this time I met Goethe, at the instigation of Döbereiner, who had told the poet that by experiments upon cats I had found a method of ascertaining with certainty whether or not a poisoning with stramonium had occurred. Goethe had thereupon expressed the desire to meet the young chemist, and to see the demonstration of his discovery. When I crossed the market square in the afternoon, dressed with a borrowed frock coat and stove-pipe hat, and carrying the cat under my arm, I created a universal sensation. The boys, who were loitering about the place, at the cry 'Doctor Poison !' suddenly came towards me, and surrounded me. To those joking at my fantastic appearance I said, 'Let me in peace. I am attending to some important business. I am going to Goethe.' I was instantly released. Coming to Goethe's house, I was led

† Ophthalmolog. Beobachtungen und Untersuchungen, Bremen, vol. i. p. 1.

‡ De la Paralyse de l'Iris occasionée par Application locale de la Belladone, et de son Utilité dans le Traitement de divers Maladies des Yeux, par Himly, trad. par Emil August Ehlers, Paris, 1802.

|| London Med. and Phys. Journal, 1801, vi. p. 352; cf. Edinburgh Med. and Surg. Journal, 1813, ix. p. 279.

¶ This book is wholly unobtainable in the book market. A brief abstract of it appeared in the *Pharmac. Handelsblatt*, 1885, p. 23.

* Conrad Moench, *Lehre von den Arzneimitteln*, Marburg, 1795, p. 337. Moench, by the way, was quite familiar with the publications of Ray and Daries.

† Rud. Abraham Schiferli, *Dissertatio de Cataracta*, Jenæ, 1796; and *Theoretical Practical Treatise on Cataract*, Jena and Leipzig, 1797, p. 85. He was military surgeon, later professor of surgery, and died as such in Bern in 1837.

into the reception-room, and soon stood before the poet. His lofty, handsome, and powerful presence made such an overwhelming impression upon me, that, all in a tremble, I handed him the cat, as if I wanted thus to defend myself. 'Ah! So,' Goethe said, 'that's what is going to be the future terror of the poison-mixers. Just let me look.' I then turned the cat's head so that the light struck both eyes simultaneously, and the difference between the eyes could be readily seen. Goethe was greatly surprised. Alongside of the small slit in one eye, the round great opening in the other presented a very striking difference. In consequence of a somewhat large dose, the entire iris had almost become invisible, thus enhancing this singular aspect. 'How did you obtain this effect?' asked Goethe. 'With hyoscyamus, your excellency,' I answered. 'I have placed the un-mixed juice of the pounded herb in the eye, therefore the action is so strong.' 'Döbereiner told me,' said Goethe, 'that both belladonna and stramonium act alike, and that you have ascertained that the active toxic principle is contained in the plant in all of its parts, from the root to the blossom, fruit, and seed. How is it with other plants, especially those of an affiliated relation?' 'A friend of mine, Dr. Carl Heise, induced by the peculiar action of the stated plants, has shown in an elaborate work that only the plants of the three orders mentioned above affect the pupils in a mydriatic manner. He has tried the action of innumerable other plants on the eye, and found them all to be inert save a few which produced the reverse of mydriasis, viz., a contraction of the pupil, such as aconitum.' 'Well,' Goethe said, 'there is a chance to discover the proper antidote for the toxic action of belladonna. Try this, and apply both antagonistic plants either simultaneously or one after another to the eyes of a cat. Observe the result. The matter is not without difficulties, but you will overcome these. But now, pray tell me, how you came to this peculiar kind of organic chemistry?' Runge related: "In 1810 I was—a pastor's son, from the country near Hamburg—sent to Lübeck, and placed in the Rathsapotheke as an apprentice. It was a warlike time, and Napoleon prepared his invasion of Russia. All men able to carry arms were mustered out, and, on account of the universal unwillingness to serve under the tyrant, it was a matter of difficulty to find a substitute. Through recommendation of my uncle, I had received admission into several aristocratic families, and the son of one of

them became a friend of mine. One evening he came to the drug-store in great commotion, and told me his trouble, that the day after to-morrow he had to present himself for service, and that, being without physical defect, he probably would be taken. 'I would like to mutilate my hand,' he sighed, 'in order not to go into this ignominious war.' 'That is not necessary,' I said. 'Confide in me. I believe to be able to mutilate you for a short time with impunity. They will have to exempt you from service.' 'What are you going to do with me?' 'I will make you blind for twenty-four hours.' 'How are you going to do that?' 'Listen to me. About eight weeks ago I had to prepare a medicine, according to a doctor's prescription, in which a decoction of the juice of hyoscyamus was to be dissolved in water. Preparing the medicine in a mortar, a drop accidentally got into my eye. I experienced no pain, and did not observe any alteration until sensations of light flashes caused me to go to the looking-glass. How great was my astonishment when I saw the change that had taken place in my eye. The iris had almost wholly disappeared, and the eye looked precisely like that of a man suffering from amaurosis. The power of vision was also greatly weakened, as I noticed when I closed the unaffected eye. I don't know why this state of things did not raise any fears in me. After lasting a few days, the abnormal condition disappeared, the power of vision returned, and also the normal proportions of the iris, so that both pupils appeared again of equal size. And behold! such an affection I will produce in both of your eyes, and it would be very queer if you would not be discharged, even after a superficial examination.' After making some easily-removed objections, my friend consented to this at that time very pardonable fraud, and thus saved his life, for of all men that went from Lübeck to the war in Russia but few returned. His temporary blindness lasted thirty-six hours, passed away painlessly, without leaving behind any deleterious results."

Thus far goes the report of Runge, from which we can distinctly see that he obtained the knowledge of the mydriatic action of the solanaceæ by the same accident as Daries derived his knowledge. Runge is consequently the seventh discoverer of this action. He tried even to practically utilize his discovery at once; for he recommended in his dissertation (*De Novo Methodo Veneficium Dijudicandi*, Jenæ, 1819) in a case of suspected atropine intoxication to place a

drop of the urine of the poisoned person into the eye of a cat. The word atropine does not seem to have been known to Runge, for the solanacea alkaloid, isolated approximately by him, he calls koromegyn (Greek, magnifier of pupil). This alkaloid was isolated in 1830 properly by the apothecary Mein,* of Neustadt-Göders, and independently of him in 1832 by Geiger and Hesse,† while Liebig‡ determined its chemical formula. The solution of the pure sulphate of atropine, instead of the extract of belladonna, was at once used by Geiger§ and Hesse for the purpose of dilating the pupil. The named chemists succeeded soon|| after also in isolating hyoscyamine, the active principle of hyoscyamus. They showed that this alkaloid, like atropine, had a distinctly mydriatic action even in a dilution of 1 to 1000.

In the majority of books treating of these historical facts, such as in Hirsch's History of Ophthalmology, and in Hirsch's Latest Discoveries of Materia Medica, Heidelberg and Leipzig, 1843, vol. ii. p. 160, we find the statement that the complete isolation of atropine and hyoscyamus occurred in the first half of the second decade of this century, and was obtained by Brandes and Runge. This, however, is wholly untrue.¶ For all those cases referred only to purified extracts but not to chemically pure alkaloids. After the mydriatic action of the solanaceæ alkaloids was positively made out, and had become generally known, their physiological *modus operandi* had to be determined.

Ernst Heinrich, as early as 1821, stated in his famous paper, *De Motor Iridis* (p. 102), that belladonna paralyzes the nerves of the muscular sphincter iridis. This view was confirmed by the experiments of Biffi (1845), Cramer and Ruiter (1853), and is now held exclusively by all ophthalmologists. Nevertheless, this view is only partially correct, for the most recent students of pharmacology have demonstrated that we have to deal here only with a paralysis of the peripheral ends of the nervus oculo-motorius, while the nervus sympathicus supplying the musculus dilator remains absolutely unaffected.

Fraser, of Edinburgh, discovered in 1861

the only practically applicable medium of pupillary contraction, viz., physostigmine or the extract of Calabar bean. Pilocarpine, muscarine, and nicotine likewise contract the pupil, but this contraction is in intensity and extent far inferior to that produced by physostigmine, and is of little practical importance.

A FEW EXPERIMENTS WITH LIQUOR POTASSII ARSENITIS.

BY M. F. WEYMANN, M.D.

AS all the compounds of potassium are claimed to have essentially the same physiological influence on animal tissues, it would, no doubt, be very interesting to assign in the course of this article a special action to the base of the drug. No such attempt, however, has been made, but the medicine simply treated as an independent entity. As for the administration, it was practised *per os*, by injection into the subcutaneous lymph-spaces and into the posterior lymph-hearts directly. All experiments—ten in number—were performed on the frog.

The first signs appearing were unusual activity and restlessness. These, however, abated after the animal had made one or two rounds along the four walls of the room, and were, no doubt, due to the irritation of the local application of the solution. Now a new train of symptoms announced itself by an almost sudden quietude. This quickness of action was, of course, more marked after injection into the lymph-hearts. The batrachian leaped only now and then, remaining in a stupor-like condition between the efforts. The jumping was less energetic, and soon difficulty in controlling the posterior extremities showed itself. Extension was inco-ordinate, and retraction slow and seemingly very labored. The animal now usually got in some corner. Movements became extremely rare. Indifference deepened into stupor. The animal would not only refuse to move on being approached, but even touching failed to elicit any response. After a comparatively short time even painful stimulation was without result. Pinching and striking violently only now and then produced a weak stirring. Still, at larger intervals, the frog made spontaneous movements, by far more perfect than any of those produced by irritation. And what seems even more strange, he would, if placed on his back,

* Liebig's Annalen, vol. vi. p. 67.

† Ibid., vol. v. p. 38. ‡ Ibid., vol. vi., 1833, p. 66.

§ Ibid., p. 68. || Ibid., vol. vii., 1839, p. 271.

¶ Equally erroneous is the statement that Reisinger (Bayerisch's Annalen; Abhandlungen aus den Gebiete der Chirurgie, Sulzbach, 1827; also *Salzburger Med. Chir. Zeitung*, 1825, No. 14, p. 237, and No. 15, p. 253) in 1824 had used the pure alkaloids of solanaceæ.

try to regain his original position with a certain readiness generally successful. But even those attempts dwindled into a mere nothing at a time when pretty perfect voluntary movements could yet be observed.

The movements of the heart were greatly accelerated and weakened. Respiration was not notably affected, and this would only be in accord with the fact that in human arsenical poisoning the shallow and hurried respiration is only due to the abdominal tenderness developed from local irritation. Breathing ceased, however, before the circulatory apparatus came to a stand-still. As the doses given were very large, death generally appeared before the lapse of forty-five minutes. This fact may also explain the absence of convulsions in all cases, except a *clonic* shivering in one.

Considering the action of the drug on the tissues *seriatim*, the nervous system claims our first attention.

If a frog be poisoned with the solution, and the vessels of one hind leg tied, the peripheral nerve ends of that member must be exempt from the influence of the poison. Soon the symptoms of paralysis appear. That the latter is not due to a laming of the motor power may be proven by the occasional occurrence of voluntary motion. The paralysis must consequently be induced by sensory inability. If now irritation of the poisoned leg fail to bring about movement, this failure will be just as apparent in the protected leg, although its sensory fibres are intact. This experiment was verified by ligaturing the whole leg, and even severing all except the nervous connection. The result was uniformly the same, therefore sensory paralysis cannot be peripheral. During this stage the motor nerves fully respond to electricity, showing the trunks to be in order. This fact makes it very improbable that the sensory fibres of the same nerve should be killed. Excluding those two possible sources of paralysis, only one—*i.e.*, the spinal cord—is left as the sole cause of the mischief. Its sensory cells are killed, and unable to transform perceptions into motor impulses any longer.

Contrary to the statements of Drs. Murrell and Ringer, motor disturbance was not noted in any case. Galvanization of the nerves promptly resulted in movement. That there was no spinal trouble, or, at least, no complete paralysis, was shown by occasional volitional contractions of the muscles. Still, a certain depressing influence on the motor

cells cannot be denied. The difficulty and perfection accompanying, in the later stages, the execution of its functions, clearly point to that effect. Additional corroborative evidence is afforded by the depression after local applications.

An influence not yet thoroughly appreciated refers, I think, to the cranial nervous centres. All higher functions must be profoundly depressed. The batrachian exhibits no fear on being approached, although our inferences from human poisoning would not warrant the conclusion that disordered vision or blindness prevails. That the centre of co-ordination is very severely impressed is shown by the inco-ordinate movements. Although there is a will and a motor apparatus to execute it, the motor machine lacks that predominating, regulating influence called co-ordination. This is at first only manifested in parts of the system, *viz.*, groups of muscular tissue. Soon, however, the centre even ceases to respond to so profound a stimulation as is afforded by an inverted position, although in the mean time disordered volitional impulses may be observed. If we take into consideration this peculiar influence exerted on the cranial nervous matter, the mysterious action of therapeutic doses of the drug as an alterative would at once be more easily understood, particularly if we are liberal with cranial centres, such as that of nutrition.

That arsenite of potassium works by absorption has been proven repeatedly. Aside from this, it has, however, a local influence. Applied to the heart directly, it first increases the pulse-rate and then diminishes systolic force. If one experiment be sufficient, these phenomena are not to be accounted for by paralysis of the vagi, as galvanization of those nerves produced very visible effects. The main factor seems to be weakness of the heart-muscle. Moreover, this fact is confirmed by a similar behavior of the excised viscus. The whole organ becomes enormously distended, and towards death the contractions resemble a mere shivering. If, however, the ventricular walls be cut, and the cavities so relieved from overdistention, the heart once more becomes regular, only to cease again in a short while. That the resumption of cardiac action is not merely the consequence of the mechanical stimulation of cutting seems very likely, because the muscle would not previously answer to galvanic stimuli. The force gradually is lost, but if a more than proportionate diminution of labor is con-

nected with it (as cutting of the walls certainly is), a *seeming* restoration of force follows. Another proof for weakness of muscular tissue lies with the fact that the ventricles must often rest. Irregularity is sometimes so pronounced that four auricular contractions are followed by one ventricular systole.

In view of these facts, we would very naturally expect to find a sinking of blood-pressure. Experimenters have proven this to be a fact, some adding vaso-motor paralysis to the *status verum*, which would only so much more condition a fall of pressure. Perhaps this action explains, to a certain extent, its *modus operandi* in intermittent fever. Of course, even then we cannot leave out our favorite appellation "alterative."

These deductions show very clearly that the liquor acts very much the same as arsenic, and that the other ingredients (*viz.*, spt. lavend.) have no perceptible influence.

THE USE OF MANACA IN RHEUMATISM.

BY F. SPENCER HALSEY, M.D., NEW YORK.

DURING the summer of 1885, while House Physician at the Almshouse and Workhouse Hospital, Blackwell's Island, I gave the fluid extract of manaca a thorough trial in many cases of different forms of rheumatism, of which the following serve as type, and indicate the class of case in which manaca may prove of service:

CASE I.—Jane S., age 49; native of Scotland; widow. Admitted to hospital May 10 with acute articular rheumatism, affecting chiefly the wrist and knee-joints, which were very tender and swollen. Suffered from slight cough, as she had only a few weeks before recovered from an attack of pneumonia. Was immediately put on a solution of sod. salicyl. of the strength of gr. xv to 3i, of which 3i was given every three hours until its effects were obtained. This was continued for four days, and on May 15 the salicylate was given in gr. xv doses t. i. d. for ten days. Slight improvement, pain less, and joints somewhat less swollen.

May 26.—Ordered ol. gaultheriæ, gtt. v t. i. d., and external applications.

May 28.—Ol. gaultheriæ increased to gtt. viii t. i. d.

May 30.—No change.

June 2.—Ordered fld. ext. manaca, gtt. xv t. i. d.

June 5.—Complains of tightness around

waist; no marked improvement; joints still much swollen.

June 10.—Better; no tightness; swelling slightly decreased; increased manaca to 3ss t. i. d.

June 15.—Manaca increased to gtt. xl t. i. d.; swelling considerably decreased; some pain still, especially in wrists.

June 20.—Patient up, and walking around; pain very much diminished, and swelling almost entirely gone.

June 25.—Manaca given in 3i doses; improvement marked.

July 1.—Joints in much better condition than ever before. Patient was discharged from hospital shortly after, being able to get around with little difficulty.

CASE II.—Margaret W., age 54; Ireland. Admitted to hospital May 28 with chronic rheumatism, from which she had suffered for over a year. Has had two previous attacks, but not so severe as this. Both wrist and knee-joints, as well as the metacarpal and phalangeal joints of both hands, and the phalangeal joints of both feet affected. Parts swollen and very tender, so that hardly any movement was able to be made. Was immediately put on quinine, gr. ii t. i. d., and manaca, fld. ext. gtt. xxx t. i. d.

June 1.—Pain much better; able to move arms a little more freely.

June 4.—Motion freer and pain less; manaca increased to gtt. xl, and continued at that.

June 12.—Patient up, and walking about the ward very well; very little stiffness.

June 16.—Marked improvement. Very good movement of joints, attended with no pain, and treatment continued with tr. ferr. chlor., gtt. x t. i. d.

June 20.—Patient discharged, with good result.

CASE III.—William E., age 45; Ireland laborer. Admitted to hospital May 1 with chronic rheumatism, affecting his knees and shoulders, which were considerably swollen and motion attended with great pain. Was put on fld. ext. manaca, gtt. xx t. i. d., and external applications of lead and opium were ordered.

May 5.—No improvement; manaca increased to gtt. xxx t. i. d.

May 8.—Slight change; manaca increased to gtt. xl t. i. d.; motion freer.

May 12.—In same condition; joints swollen very much; was ordered manaca in 3i dose q. four hours.

May 15.—Better; can walk a little.

May 20.—Pains returned, and patient unable to move; manaca stopped, and ordered sod. salicylate in gr. xv doses q. three hours, under which he improved, and was discharged, being able to walk out of ward very well.

CASE IV.—Bernard S., aged 50 years; Germany; laborer. Admitted to hospital June 17 with chronic rheumatism, attacks of which he has had off and on for the past five years. Ordered fld. ext. manaca in doses of gtt. xx t. i. d.

June 19.—No change; manaca increased to 3ss t. i. d.

June 20.—Slightly improved; can move freer; manaca ordered to be given in gtt. xl doses, with local applications.

June 22.—No better; manaca 3i t. i. d.

June 25.—Pain in hands and feet worse; unable to sleep; complains of headache and pain in eyes; manaca pushed to 3ii.

June 27.—Pain in head worse; dizzy at times; rheumatism no better; manaca stopped, and patient put on ol. gaultheriæ, gtt. v. t. i. d.

June 29.—Better; ol. gault. increased to gtt. viii, also used externally in ointment.

July 1.—Patient walking about with cane; pain in head gone; swelling of joints less, and more motion. Continued for a week longer, and on July 10 was discharged, greatly improved.

CASE V.—Mary E., age 40; United States. Admitted to hospital July 15 suffering from chronic rheumatism of nearly two years' duration. Ordered manaca, 3ss t. i. d., and quinine, gr. ii t. i. d.

July 18.—No change; manaca, 3i t. i. d.

July 21.—Slight improvement; manaca increased to 3ii t. i. d.

July 23.—About the same; ordered manaca in 3iii doses.

July 25.—Complains of dizziness and pains in head; joints no better; manaca stopped, and sod. salicyl., gr. xv t. i. d., ordered.

July 29.—Better; can get around ward fairly well.

July 31.—Patient discharged, time up, in improved condition.

CASE VI.—Edward R., aged 56; Ireland. Admitted to hospital August 15. Has suffered from rheumatism, off and on, for the past three years, his feet and hands being chiefly affected. Feet swell up so that he is unable at times to put on his shoes; no kidney nor cardiac trouble; was put on manaca, gtt. xx t. i. d., and tonics.

August 18.—Improving; manaca, 3ss.

August 20.—Feet better; got shoes on to-

day for the first time in over three weeks; manaca, 3i.

August 23.—Improvement continues; pain and swelling entirely gone; manaca, 3iss, ordered, and tr. ferri chlor., gtt. xv t. i. d.

August 25.—Same condition.

August 26.—Motion freer; joints in better condition; continued treatment.

August 29.—Walks around ward with more ease than he has for several weeks; swelling all gone from feet, and general condition greatly improved.

September 2.—Discharged; good result.

CASE VII.—James W., Englishman; age, 40. Admitted to hospital August 25 with chronic rheumatism in knees, ankles, and wrists. Unable to walk, except with very great difficulty and pain, for over two months. Was put on sod. salicyl., gr. xv t. i. d., and lead and opium wash ordered locally.

August 28.—No change; salicylate increased to gr. xx.

September 1.—Complains of headache and ringing in ears; joints no better; still suffers much pain; treatment changed, and manaca ordered in 3ss doses.

September 3.—Pain less; manaca given in 3i doses.

September 5.—Improved; more movement of joints, with less pain and swelling; manaca now given q. i. d. in 3i doses.

September 8.—Patient much better; walks with a cane very well.

September 10.—Improving daily; put on tr. ferri chlor., gtt. x t. i. d.

September 12.—Walked about the ward with no help to-day; swelling entirely gone; very good use of joints.

September 16.—Discharged, with exceedingly beneficial results.

Résumé of Cases.

Disease.	Sex.	Age.	Amount (Maximum).	Time.	Result.
1. Chr. rheum.	F.	49	3i	52 days.	Good.
2. Chr. rheum.	F.	54	gtt. xl	24 days.	Good.
3. Chr. rheum.	M.	45	3i	21 days.	None.
4. Chr. rheum.	M.	50	3ii	24 days.	None.
5. Chr. rheum.	F.	40	3iii	17 days.	None.
6. Chr. rheum.	M.	56	3iss	19 days.	Good.
7. Chr. rheum.	M.	40	3i	22 days.	Good.

7 cases in all,—4 attended with good results, 3 attended with no results.

THE THERAPEUTIC VALUE OF ICHTHYOL.

BY DR. JOSEPH SCHMIDT, BERLIN, GERMANY.

(Conclusion.)

IN the first part of this paper I discussed the pharmacal and physiological relations of ichthyol, and alluded to some of the uses which the new remedy had found in dermatological practice. Dr. Unna, of Hamburg, learning that I was writing about ichthyol, kindly placed at my disposal the manuscript of his as yet unpublished "Dermatologische Studien, II.," which, as the most exhaustive existing treatise on the dermatological use of ichthyol, will claim the attention of all specialists. I have to content myself with merely mentioning the principal skin-affections in which ichthyol has proven of high curative value. Of acne, rosacea, and lepra I have spoken before. Eczema, especially the so-called "nervous form" (*i.e.*, depending upon nervous lesions), deserves an especial allusion. Unna emphasizes the striking results obtained in this affection with the simultaneous external and internal employment of ichthyol. The drug proves almost of equal value in lichen urticatus, prurigo, ichthyosis, urticaria, erythema (multiforme and nodosum), zoster, herpes (progenitalis and labialis), and dermatitis herpetiformis.* In intertrigo the ichthyol ointment is likewise a certain cure, as has been repeatedly observed by myself. In erysipelas and erysipeloid conditions, recently described by Rosenbach, ichthyol in one or another form will likewise give very prompt results. In erysipelas affecting the scalp a twenty to fifty per cent. ichthyol ointment is to be used, and, if the fever be high, together with the ice-bag, although the latter checks the absorption of the remedy. The ichthyol-alcohol-ether spray is, however, a more eligible application, and is to precede the ice-bag. If the erysipelas affects the extremities, Unna recommends the following formula :

R Ammon. sulfo-ichthyolici,
Spir. ætherei, \mathfrak{ss} f \ddot{z} iiss;
Collodii, f \ddot{z} v. M.

Brush to be inserted in the cork.

In lupus and sykosis, ichthyol can only be regarded as an auxiliary remedy.

In the broad condylomata and keloids our remedy, employed with the brush or in the soap-form, has given moderately good results.

More gratifying is the effect of ichthyol

when applied to the extensive, deep cicatrices of the face, as often seen after smallpox and acne. Daily brushing with a strong ichthyol ointment or the ichthyol collodium will produce a firm mask-like crust on the entire face, which, when falling off, will leave behind a softer skin and more shallow marks. Dr. Schlossberger † has treated in this manner the face of a smallpox patient with an unexpected success.

The value of ichthyol in burns claims the earnest attention of every practitioner. The principal features of this employment are the avoidance of vesication (provided the remedy is applied at once) and the alleviation of pain. In burns of the first degree all symptoms can be removed in a very short time by an immediate application. If burns of a more intense form are partially treated with ichthyol it can be readily seen that the ichthyolized portions *present no vesication*, while the unmedicated places present the typical picture of burns of the second degree. The ichthyol application either removes all morbid symptoms or reduces the burn of the second degree to one of the first degree; pain invariably disappears soon after the application of the drug. Numerous authoritative observers agreeing in the unrivalled value of ichthyol in burns, it is fair to assume that this remedy will replace all other therapeutic measures of a lesser efficacy.

Next to burns, the usefulness of ichthyol is most pronounced in the removal of swellings of a traumatic and rheumatic kind. I have used the drug in about two dozen cases of this kind, and can testify to its remarkable efficacy. The affected parts are to be washed first with lukewarm water (to open the pores), and then the solution is to be applied on a piece of cotton. Thorough rubbing is a greater requisite than the application of a large quantity of the drug. After the application the parts are to be dressed in the ordinary manner; in rheumatism with cotton, preferably. One application pro die is usually sufficient, provided the drug is well rubbed into the parts. Pain and swelling invariably yield to the drug, and a couple of days suffice in most instances to eliminate all morbid symptoms. In two cases of a rheumatic swelling of the ankle-joints, a single application followed by a cotton dressing removed pain and swelling on the third day.

It is claimed that the drug is a specific anti-rheumatic of the highest value, and that its

* Quite recently described by Prof. Duhring, of the University of Pennsylvania.

† On board steamship "Polynesia."

greatest efficacy in rheumatism is obtained from its combined external and internal application. Having no personal experience with the internal administration of ichthyol in rheumatism, I refrain from expressing any opinion on this point, though it is true that Prof. Schweninger, of Berlin, in a letter addressed to the Ichthyol Company of Hamburg, states that in his experience "ichthyol is an anti-rheumatic of the first rank," and that Prince Bismarck has permitted him to announce that the preparations of ichthyol have invariably given him the promptest relief in rheumatism, *ischias*, lumbago, and contusions.

It is clear that a recommendation coming from such a source must go far—in Germany, at least—in popularizing the new remedy.

The applicability of ichthyol is so extensive that, although having discussed its uses in very many affections, there are still some remaining which demand an allusion.

The drug possesses pronounced styptic qualities, and is consequently useful in all hemorrhages and wounds. The ichthyol plaster which I have tried gave better results than any other medicinal plaster used in cuts and wounds. The sticking quality of the ichthyol plaster is so intense that it does not fall off the part even when being washed.

In conclusion, I can state that even in tooth-ache ichthyol has in my hands sustained its character of a prompt relief-bringing remedy. A drop or two of a combination of ichthyol and chloroform (one to three) placed on a piece of cotton in the hollow of the tooth, or rubbed into the adjacent gum, is certain to bring almost instantaneous relief.

I have no doubt that this new remedy, endowed with the highest of healing powers, will find a fair trial with the American practitioners, and will in time become as popular in America as it is in Europe.

SOME REMARKS ON THE TREATMENT OF THE SUMMER GASTRO-INTESTINAL DISEASES OF CHILDHOOD.

BY J. H. MUSSER, M.D., PHILADELPHIA.

THE outlines of treatment herein indicated have been so eminently satisfactory to the writer during the past four years that it was thought they would be of interest to the profession. No claims to originality are made for the methods, and doubtless the reader will observe only a repetition of what has been said before. Their repetition is ventured upon,

however, because of their great value in the writer's experience. The essential to success is the selection and pursuit of a systemic plan of treatment in cases of summer intestinal disorders. This, above all, is insisted upon.

The summer disorders of childhood are vomiting (acute and chronic indigestion), simple diarrhoea, enterocolitis, and cholera infantum. Vomiting and simple diarrhoea often are present in the same subject and due to the same causes. The causes in general of all these complaints are extreme heat, improper food, atmospheric changes (cold and dampness), a vitiated atmosphere, and reflex irritation from teething, etc. One or more of these causes preponderates in the respective affections. Their universal presence in various degrees in all the complaints renders it necessary to base a treatment of the ailment on a removal or counter-action of these general evil influences. What should be done is patent, and therefore, bearing this in mind, the outlines of treatment will be presented. The management common to all these affections will be detailed, and then some few remarks made on the therapeutics of the individual affections.

GENERAL MANAGEMENT OF THE SUMMER GASTRO-INTESTINAL DISEASES.

Diet.—The simplest and blandest articles of nourishment are ordered. In an acute case, as acute vomiting or cholera infantum, the child is taken from the breast, or the usual milk or artificial food is removed, and weak rice-water or barley-water given. The happiest results are often seen in the use of these simple means for twenty-four or forty-eight hours. In cholera infantum, brandy alone well diluted is used if the rice-water is not retained or the stage of collapse is imminent. In fact, for twenty-four or forty-eight hours, brandy, sometimes in incredible doses, is given. Five to twenty and thirty drops every half-hour or hour are frequently ordered. After the stomach has regained its strength, stronger nourishment may be used. Four things are relied on,—1. Cream, a teaspoonful to three ounces of warmed water every hour or two, gradually increasing the strength; 2. Milk, peptonized according to the Fairchild method; 3. The well-known gelatin, cream and milk preparation, recommended by Meigs and Pepper; 4. weak chicken-broth. In the more chronic summer ailments this dietary may be resorted to alone. Flour, boiled and baked in a bag until very hard, grated fine and added to milk, is of great service. Not much confi-

dence is placed by the writer in the artificial foods or condensed milk. They are of inestimable value under circumstances which prevent the preparation of the above articles. A careful mother, it always seemed to the writer, can supply from her own kitchen the foods which are heralded forth with so much mystery. The suggestions of Keating, Meigs, and many others give timely aid to the anxious mother in the making of foods. It is true, if the parent does not have a refrigerator to keep the milk, and other essential utensils, or the simple knowledge to cook properly, condensed milk or some "infant's food" are necessary.

Bathing.—Bathing is used to reduce the temperature, for derivative purposes, and for the sake of cleanliness. Children in close quarters during the hot weather, with even an ordinary gastro-intestinal affection, are ordered to be bathed in warm or tepid water every two hours, and encouraged to remain in the bath some time. Certain cases of cholera infantum, presenting cerebral symptoms not unlike thermic fever, have hyperpyrexia, due to excessive heat. To reduce the temperature is important. Cloths wrung out of ice-water and applied to the head, spine, and abdomen may suffice. Careful spongings with water and alcohol are of eminent service. Cold baths, the patient being placed in a bath at 100°, reducing gradually to 60°, are at times necessary. It has not been the writer's lot to resort to this method often. It is our only hope in some cases, however. For derivative purposes the general warm bath is used. It should be used, if there is fever, irritability, and sufficient strength, two or three times daily. If there is much exhaustion, the baths for cleanliness should be made stimulating by the addition of salt, whiskey, or alcohol. Sea-salt has been of service.

External Derivatives.—They are important. A weak mustard-plaster, the familiar spice-plaster, or flannel dipped in Jamaica ginger (3i) in hot water (3iii), applied to the abdomen, may be used. Hot foot-baths and mustard foot-baths are of great value. If there is fever and irritability, frequent foot-baths are ordered, and their good action is manifest in quieting the perturbed nervous system. It is of prime importance to keep the abdomen protected. When the stimulating applications are not used, warmed flannel, well fitting, is kept on. The extremities, too, must be protected. Long stockings should be worn, or the feet otherwise clad. In entero-colitis and

chronic diarrhoea these precautions are almost essential to successful management.

Inunctions.—They are of extreme value, and have saved life in many of the writer's cases. Not only is the absorption of the oil of service, but, doubtless, by the gentle manipulation, all the advantages of massage are secured. In the acute or subacute affections, without fever, inunctions are begun at once. In the stage of extreme prostration after cholera infantum, or in the marasmic state that is so liable to ensue, its effects are often magical. Cases of indigestion (chronic vomiting) respond rapidly to this form of nourishment. Inunctions are especially indicated in every case in which there is gradual but palpable failure in strength and loss of flesh. In fact, it may be said, in every case of summer affections, either baths or oil inunctions are used by the writer, and the latter in all cases in which the former is not more strongly indicated. The only possible exception to this is in cases of sthenic entero-colitis, but if there is much debility following, inunctions are ordered. In many cases the baths and inunctions are used, the baths until the acute febrile symptoms have subsided, the inunctions subsequently. The writer orders cod-liver oil once or twice daily, gently rubbed in, and every second day a cleansing bath of alcohol and water. It is of advantage sometimes to anoint with oil at night, and use the cleansing bath in the morning.

Stimulants.—But little need be said of stimulants. They are indicated on general principles, and are of great service not only in cholera infantum, as previously indicated, but in other affections. In gastric affections, a good claret or sherry or whiskey are the best. In diarrhoea, burnt brandy, port, or some astringent cordials, as home-made blackberry wine, may replace the others.

MEDICINAL TREATMENT OF THE SUMMER GASTRO-INTESTINAL DISEASES.

While important, the writer is disposed to think its value is secondary to that of the hygienic management. Certain it is that more cases will get well with the management indicated above without medicines than with medicines and a disregard for hygienic and dietetic principles. The selection of remedies is usually based by most practitioners on the symptoms. Theories of the nature of the disease guide others, and, if they were based on facts, would be the true indications for rational treatment. The theory of the ptomaines is becoming more and more a reality, and

if it is proven as the basis of many intestinal disorders, our treatment must be carried on in accordance with such views. Granting it, the plan to pursue is to prevent abnormal decomposition of ingesta in the stomach, to prevent abnormal decomposition in the intestines, to remove the products of decomposition, and to antagonize their action. We are not sufficiently familiar with the physiological, or rather pathological, action of ptomaines to be able to counteract their evil influence by medicines. Much work is being done, however, and light will soon be given us. The prevention of the decomposition of ingesta and intestinal products is, we submit, effected by the selection of a proper diet. It will be seen further that calomel is a most important therapeutic agent, and what empiricism has taught we now learn from scientific experiment to be correct. No doubt the antiputrefactive power of calomel is one most important reason of its great value. Again, to remove the products of decomposition, we have in calomel a reliable agent; other remedies of a purgative or laxative nature have their place. The subsequent suggestions are made from clinical experience, and are given devoid of theory.

Vomiting, Acute.—Calomel, in small, frequently-repeated doses, is one of the best sedatives. One-eighth to one-twentieth of a grain every half-hour is ordered.* If there is fever, pain, or great restlessness, one-twelfth to one-fourth of a grain of Dover's powder may be added.† The value of the drugs is enhanced and their efficacy rendered possible only by the small size and very frequent repetition of the dose. The writer places most reliance in the calomel and Dover's powder combination. Often, in simple cases of vomiting, lime-water and whiskey are of service. For the more chronic forms of vomiting, with calomel subnitrate of bismuth is ordered; lacto-peptine, or saccharated pepsin, is often used. In some obstinate cases of vomiting my friend Dr. Gittings told the writer he has used a decoction of peach-leaves with success. He has the fresh leaves gathered, and a small handful steeped in boiling water (Oss). The

* R Hydrarg. chlor. mit., gr. i;

.Sac. lactis, gr. iii.

M. Ft. chart. No. xx.

Sig.—One every fifteen or thirty minutes dry on the tongue (infant 3 to 6 months).

† R Pulv. Doveri, gr. i;

Hydrarg. chlor. mit., gr. i.

M. Ft. chart. No. xii.

Sig.—One every fifteen minutes until asleep or relieved (child 6 months).

water is decanted, and used freely. The writer's personal experience accords with the above. Again, a weak acid mixture, as the acid solution of pepsin devised by Schaeffer, has been of service in many of my cases. These have been cases of feeble digestion; an atonic state of the system as well as the stomach being obvious. The glycerin in the preparation may be of advantage in preventing putrefaction in these cases. The general management above indicated is all-important.

Simple Diarrhœa.—The simple astringents, the familiar antacids, the occasional use of rhubarb with an antacid, generally suffice. Jardinella's syrup, or the fluid extract of blackberry, is of great value alone or combined with other astringents. In the protracted or chronic forms, nitrate of silver in solution is of great service. Carboic acid with bismuth, where bismuth alone failed, has been of value.

A warm abdomen and warm feet are important, as well as a proper diet and good hygiene.

Entero-colitis.—With external stimulating applications and care in diet much can be done, but some medicines must be used. These agents are resorted to,—castor oil and laudanum, rhubarb and laudanum, or quinine and calomel.

The writer usually commences at once with mist. olei ricini and laudanum, administering a dose every two hours‡ until the tormina and tenesmus are relieved and the blood and mucus flux checked. If a rhubarb mixture be used, either the sweet tincture or the spiced syrup are the best preparations. In some obstinate cases, or cases complicated with malaria, or in malarious regions, quinine, in powder or syrup, alternating with small doses of calomel and Dover's powder, is essential. As soon as the passages are free from mucus and blood, the tenesmus relieved, astringents and tonics replace the above. The writer has the notes of seven cases of entero-colitis treated with creasote with excellent effect, two resisting all other treatment previously.

Cholera Infantum.—A very successful run of cases treated by the very frequent use of Dover's powder and calomel, in small doses, dry on the tongue, has made the writer rely chiefly on these drugs. Stimulants, of course, are used. The prescription of morphine and

‡ R Mist. olei ricini, ʒi;

Tr. opii deod., gtt. xxiv-xl;

Ol. cinnamomi, gtt. iv-xi. M.

Sig.—Fifteen to twenty drops every two hours (infant 6 months old).

sulphuric acid, long ago advised by Meigs, is one that often checks vomiting, yet so often has the writer been disappointed, all medicine being rejected, that he resorts to placing the powders mentioned above on the tongue. They are so minute that they are readily taken into the pharynx, and the water or stimulant washes them down. If the child sleeps, the powders are not given so frequently. The writer has not had the misfortune to see the stage of collapse ensue in cholera infantum since instituting the above plans of treatment. He sorrowfully admits that he has never had any cases to recover from the cholera collapse. After the more acute symptoms of cholera infantum are controlled, tonics and astringents are used.

The writer's experience with small enemas, containing astringents and opiates, has been extremely unsatisfactory. He failed to see any benefit that could not be accounted for by the other drugs.

It is to be remarked, finally, that these methods of treatment are not to replace the removal of the sick patient to the sea-shore or mountains. They are especially for the unfortunates who cannot be removed from the depressing influences of the heat, bad air, and generally unhygienic surroundings.

3705 POWELTON AVE., W. PHILA.

NOTES FROM GENERAL PRACTICE.

BY FRANCIS L. HAYNES, M.D.

I. COCAINE-SPRAY IN EPISTAXIS, AND IN NASAL SURGERY GENERALLY.

I A., aged 20, suffering from a severe attack of typhoid, was troubled by frequent epistaxis. The attacks were invariably relieved by throwing into the nostrils, for a few moments, spray from a two per cent. solution of cocaine. On one occasion, copious bleeding was allowed to persist for three hours, when the spray checked it immediately. Until the patient convalesced, the spray was needed almost daily, and frequently several times a day, but the nurse never allowed more than a few drops of blood to be lost.

Four per cent. solutions of cocaine, applied freely as a spray, are efficient in preventing pain from slighter manipulations, such as the removal of gelatinous polypi. Before more severe operations, in addition to the use of a four per cent. solution by the spray, a ten per

cent. solution should be accurately applied on one or more pledgets of absorbent cotton to all surfaces about to be treated, and kept in position for ten minutes. Where this is impossible, a ten per cent. spray may be used, placing the tip of the atomizer as near the seat of the disease as may be. With these precautions, I have made an incision through the whole length of the cartilaginous septum, and transfixed with Roberts' pin, the patient declaring the procedure to be painless. Operations under cocaine are attended with but little hemorrhage, thus contrasting remarkably with those performed under ether-anæsthesia.

The facility with which some of the more remote portions of the nasal cavities may be examined and treated, after the complete shrinkage of the erectile tissues produced by cocaine, needs but to be mentioned here.

Cocaine is as essential to a thorough examination of the nose as a mydriatic to that of the eye.

The spray, from the rapidity and diffuseness of its action, is undoubtedly the best method of applying the drug, for this and for many other purposes.

An atomizer made by the Davol Company ("Magic, No. 25"), I have found very useful in operations upon the pharynx and nasal passages.

1924 E. CUMBERLAND ST., PHILADELPHIA.

HIMROD'S ASTHMA CURE.

This proprietary medicine, which has attained a certain reputation in the treatment of asthma, is said to consist of a mixture of coarsely-ground stramonium-leaves and lavender-flowers with a little benzoin, the whole sprinkled with sufficient of a saturated solution of nitrate and chlorate of potassium to make the powder burn well. Another formula consists of equal weights of powdered lobelia, stramonium, black tea, and nitrate of potassium, well mixed and sifted. DR. MORELL MACKENZIE, quoting the last formula, recommends the addition of a little aniseed or fennel. A French formula advises stramonium and sage. The foregoing may or may not be identical with the proprietary article, but in any case they share with it the power of alleviating and cutting short the troublesome attacks to which sufferers from asthma are liable. It is an unsatisfactory feature of even the best remedies that they ultimately fail to produce the relief which first attended their use.—*Med. Press and Circular*, May 26, 1886.

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EDITED BY
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AND
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Leading Articles.

NITROMURIATIC ACID AND MELANCHOLIA.

It will possibly be remembered by our readers that we published some months ago a lecture by Dr. H. C. Wood upon Melancholia, in which the relations of the disorder with oxaluria were incidentally discussed, with the conclusion that there are two sets of cases in which there is emotional depression associated with oxaluria. In the one set the administration of nitromuriatic acid causes both the oxaluria and the melancholic feelings to disappear, while in the other set the remedy does not affect either condition. The author further called attention to the need of the study of the urine by those who in asylums meet with insane patients in numbers. This lecture has called forth a very interesting article by Dr. G. D. Stahley in the *Medical News* for June 5, in which the results of the examination of the urine of 172 patients for the oxalates are given as follows:

"Mania, 72; melancholia, 38; dementia, 41; paresis, 18; imbecile, 3. Of these 172 admitted, 32, or 18.6 per cent., showed the presence of oxalate of calcium in their urine. Dividing these cases into their respective groups,

we have the following: In the 72 cases of mania we find the presence of crystals of calcium oxalate in 13, equal to 18 per cent.; in 38 cases of melancholia we find 7, equal to 18.4 per cent.; in 41 cases of dementia, 10, or 25 per cent.; in 18 cases of paresis, 2, or 11.1 per cent.; the remaining 3 cases were imbeciles, and their urine contained no oxalates. A summary of these places dementia at the head of the list with 25 per cent.; then melancholia, 18.4 per cent.; then mania, 18 per cent.; then paresis, 11.1 per cent.; and on the whole number, a percentage of 18.6."

"It appears from this showing, that if oxaluria is to be considered symptomatic of any form of mental derangement, the priority must be given to dementia and not to melancholia. It will be observed that melancholia, with its 18.4 per cent., falls somewhat short of being up to the average on the whole number, which is 18.6 per cent. In regard to the quantity of the oxalate present in each case, the examination notes credit two cases of mania and one of paresis, with an 'abundance,' and all the remaining ones are marked 'a few,' meaning the presence of one, two, or three crystals at most in each microscopic field. Of these two cases of mania, one was of the subacute form, with delusions of suspicion, and produced by alcoholic excesses; the other was an acute case, and characterized by mental confusion, restlessness, and homicidal impulses; the case of paresis was typical of that form of insanity."

"It was noticed that, on admission, oxaluria existed in 32 of these cases. Up to the present time, 15 of these have been discharged, and 17 still remain in the house. Of the 15 discharged, it is not known whether the oxaluria had disappeared or not, as no analysis was made previous to their departure. The 17 cases which still remain are divided in type as follows: Mania, 7; melancholia, 3; dementia, 6; and paresis, 1. Of the 7 cases of mania, in 3 the oxalate of calcium has disappeared from their urine; their mental condition has not improved since their admission, and we do not expect them to recover. The remaining 4 cases still exhibit some oxaluria, of which number, only one, a case of acute religious mania, admitted the last week in February, we hope to restore. Of the 3 cases of melancholia, the oxalates have disappeared in all; 1 of them is convalescent, and the other 2 present a very unfavorable prognosis. Of the 6 cases of dementia, there is an absence of oxaluria in 5, and in neither is there

the remotest chance for recovery. The sixth case, complicated with epilepsy, still contains some crystals, and presents no favorable symptoms. In the case of paresis, some calcium oxalate still remains; his prognosis is the customary one in such cases. Thus, it appears that in a total of 11 cases in which oxaluria had been present on admission, but subsequently disappeared, only 1 case is convalescent. And in a total of 6 cases in which oxaluria existed on admission, and still continues, only 1 case has any reasonable prospect of recovery."

These results are exceedingly interesting and valuable, but they do not prove, as Dr. Stahley seems to think, that there is no relation between mental depression, oxaluria, and nitromuriatic acid. Oxaluria may exist without mental depression; mental depression may exist without oxaluria; oxaluria may exist without melancholia; oxaluria and mental depression may coexist and have no relations with nitromuriatic acid; and yet there may be a form of mental depression and oxaluria having very direct therapeutic relations with nitromuriatic acid. Headache may exist without strabismus, strabismus may exist without headache; headache and acute strabismus may coexist without having any therapeutic relations with iodide of potassium, and yet the coexistence of headache and strabismus ought always to suggest the use of iodide, and often is cured by such use.

We suppose that every physician in private practice must have seen numerous cases of depression of spirits, varying in intensity, in which the oxalate of calcium does exist in the urine, and is removed by the use of nitromuriatic acid with the relief of the depression. The fact that often the oxaluria can be removed by vacation and exercise is also no proof that it cannot also be cured by nitromuriatic acid.

The relation between mental depression, oxaluria, and nitromuriatic acid is no new thing. The writer well remembers it being distinctly taught during his student life at the University of Pennsylvania a quarter of a century ago, and his own glee before graduation at the success of his application of the teaching to the case of a fellow-student. The most that can be with any degree of propriety claimed for the facts of Dr. Stahley is that they indicate that in the graver forms of insanity that are met with in asylums the oxaluria is an accident of the disease not etiologically connected with the emotional condition. He is also probably correct in be-

lieving that under these circumstances the oxaluria is frequently due to derangement of the digestive organs.

Some of the arguments of Dr. Stahley seem to us of importance, as leading up to certain conclusions, to which we have been in the last few years more and more drifting, namely, that the so-called diseases of insanity are not diseases at all, or, in other words, that melancholia, mania, and similar so-called diseases are simply symptom-groups, and that until this is recognized there can be little clear thinking about insanity. The paragraph which we have referred to reads as follows:

"And, when we find cases of melancholia associated with oxaluria, let us not be guilty of perpetrating an irrational division of the disease into two varieties, based on the fact that in the one case nitromuriatic acid dissipates both the diathesis and the disease, and that in the other it does neither. Such a division is most irrelevant and unscientific. As well divide all headaches into two varieties,—the first constituting those which are relieved by inhalations from the family camphor-bottle, and the second, those which are not influenced by this procedure."

Possibly Dr. Stahley, when age shall have cooled his youthful impetuosity, will learn that in friendly discussion of scientific questions nothing is gained by asserting that those who differ from oneself are guilty of perpetrating irrational acts, but his paragraph is an exceedingly useful one, as enabling us to illustrate the meaning probably intended by our contributor, and also some ideas which will perhaps meet with no more favor from Dr. Stahley than did oxaluria.

The paragraph seems to us to illustrate very clearly the confusion of thought which grows out of considering a symptom-group to be a disease. The modern scientific physician knows headache is not a disease, but if he finds clinically that a certain headache, characterized by the presence of a certain substance in the urine, is relieved by a certain remedy, he does not hesitate, for practical purposes, to separate that group of headaches from other headaches. Now, melancholia so called is not a disease at all, but, like headache, is a symptom, or a symptom-group, and it is practically important to distinguish groups of cases to be recognized by association of the melancholia with other symptoms relieved and having peculiar relations with remedies. In old times the neurologists spoke of hemiplegia as a disease, and to-day we know that hemiplegia is a symptom which may de-

pend upon a great variety of causes. The pathology of insanity is so utterly recondite and so little understood, that symptom-groups are almost the only thing we can at present recognize. Scarcely two writers upon insanity can be found to acknowledge the existence of the same so-called diseases, much less to define them similarly, or to group them in like manner. The classification of the forms of insanity seems to be utterly hopeless, probably because we know nothing whatsoever of the diseases which afflict the mental functions, and substitute for such diseases the symptom-groups already spoken of. If melancholia, mania, etc., are diseases, we must consider that distinct diseases are based upon the same brain-lesion, for it is well known that in general paralysis of the insane the sufferer may be profoundly melancholic, may be wildly maniacal, or may in contented quiet nurse his delusions of grandeur.

THE LOCAL ANÆSTHETIC ACTION OF BRUCINE AND THEINE.

NO other department of the whole province of pharmacology has been more thoroughly and successfully studied during the last two years than that of local anæsthesia. The discovery of the now famous anæsthetic property of cocaine has furnished the praiseworthy stimulus to the efforts which have been put forward in search of the same property in other therapeutic agents. And the strangest feature of this whole investigation exists in the fact that none of the substances which have been shown to possess the power of local anæsthesia are of recent discovery, but all were believed to have their well-defined places in the works on materia medica, and some of them were known to the profession for hundreds of years.

About a year ago there appeared an article in this journal (see *THERAPEUTIC GAZETTE*, June 15, 1885) on the "Physiological and Clinical Action of Brucine," by Dr. Thomas J. Mays, of Philadelphia, in which he shows that, physiologically, brucine has a specific affinity for the nerves of sensation, and that it produces local anæsthesia both in animals and man when applied to the surface of the body. It was found that a five or ten per cent. solution of the drug completely relieved the scalding on the lip and tongue produced by Cayenne pepper, as well as the itching produced by croton oil, and the burning caused by a mustard-plaster. It also gave surprising

relief to several cases of pronounced chronic pruritus. Its power of relieving perverse itching in any part of the cutaneous surface, especially in pruritus of the anus and vulva, has been confirmed by the clinical experience of the writer in a number of cases of this kind. Dr. Charles H. Burnett, in a paper read before the American Otological Society, July 12, 1885 (*Trans. of Amer. Otolog. Soc.*, 1885), attests the inefficiency of cocaine applications to the ear, but reports excellent results from the application of a five per cent. solution of brucine to the same. He states that "the relief to pain has been prompt and complete, a result far more satisfactory than any obtained by using cocaine solution." He applied it by means of a cotton mop. Dr. Ralph W. Seiss, of Philadelphia, contributes some interesting notes of quite an extended experience with brucine in the *THERAPEUTIC GAZETTE* for January 15, 1886. He employed it in painful furuncles of the external auditory canal, in suppurative otitis, in sensitive conditions of the auditory canal for the purpose of rendering the use of instruments painless, and of lessening or abolishing the pain and burning caused by applications of iodine, nitrate of silver, sulphate of copper, and the like to the mucous membranes of the throat and nasal passages, and witnessed marked relief in the great majority of instances. Although more permanent in its effects, he does not believe it to be as reliable as cocaine.

Although the action of brucine never obtained much scientific investigation, it was always taken for granted that, like its twin-sister, strychnine, it almost exclusively affected the motor division of the spinal nervous system; yet the experimental and clinical data referred to render it very certain that either a notable difference exists between the action of these two agents, or that all our physiological and clinical knowledge of the action of strychnine rests upon an insecure foundation.

But one of the most remarkable of all the local analgesics which has been brought before the profession is theine, the alkaloid of Chinese tea. Attention was also first drawn to this agent by Dr. Mays in an article on "The Physiological and Therapeutic Action of Caffeine, Theine, and Guaranine," which appeared in the *THERAPEUTIC GAZETTE* for September 15, 1885. It was here shown, from experiments made on frogs, that theine paralyzes the nerves of sensation; and that this impairment of sensibility proceeds from the centre to the periphery, and not, like that of brucine, from the periphery to the centre.

Subsequent investigations by the same author, which were published in the *Medical News* for December 12, 1885, and April 17, 1886, proved that it exerts the same influence on man. In the two last-mentioned articles the author contributes the clinical results derived from thirty-nine cases of painful affections in which it was employed by himself and by some of his colleagues, and it appears that the verdict is almost unanimous in favor of its usefulness, not only in affording immediate relief to the pain, but also in effecting a cure in many of the cases. The special nature of pain in these cases consisted of neuralgia, chiefly of the sciatic, intercostal, and cervico-brachial variety, lumbago, myalgia, rheumatic pain, etc., in which from one-half to two and a half grains of the alkaloid were introduced subcutaneously at or near the central origin of pain.

Among the extraordinary features in the action of theine is its localized anæsthesia below the seat of injection. There can be no question about its general absorption; but there has occurred no evidence in the author's experience to show that it produces any systemic disturbance, even in maximum doses. Its absorption and distribution by the blood probably play a secondary rôle, for it seems to exert its influence on the trunk of the nerve at the point of its injection, and then to distribute itself downward along its course in spite of these functions. This localized action of theine naturally gives it an immense advantage over morphine, atropine, chloral, and other agents of that class, which principally act by intoxicating the central nervous system.

Theine also appears to be very prompt in its anæsthetic action. The writer has on a number of occasions witnessed patients suffering from the most excruciating neuralgic pains, who were entirely relieved in less than five minutes. It is also very rare to find the pain returning in less than ten or twelve hours, and oftener not until in twenty-four hours, and then very probably not in its original intensity.

Evidence from other sources than those above quoted convinces us that theine has a wide scope of application, and that it bids fair to play a most prominent part in the therapeutic relief of pain. We, therefore, await with much concern further developments in the use of this interesting drug.

Now a few words to those who never weary of asserting the utter worthlessness of experimental therapeutics to practical medicine. It is very clear, of course, that such dogmatism

only springs from insufficient scientific training, combined, probably, with a desire of truckling to that popular prejudice which every new science encounters. It is evident, too, that in the end such pedantic efforts will prove to be as harmless as the kick which Sam Weller administered to the fat boy when he undertook to express admiration for the pretty cook: there can be no doubt, however, but that they exert a mischievous influence on the formative period of public opinion on this question at the present time. It is noteworthy, therefore, that in brucine and theine we have two more agents added to our list of remedies, which have been given by experimental to practical medicine. Brucine was isolated in 1819, and, until the appearance of Dr. Mays' article, its action was regarded as being analogous to that of strychnine. So, also, in the case of Chinese tea. The leaf of this plant has formed a domestic drink for many centuries, and its alkaloid theine has been known for nearly threescore years; yet no one suspected that the latter contained an analgesic action more remarkable than that of cocaine until it was discovered by the crucial test of scientific experiment, and that on the frog alone.

THE PREVENTIVE INOCULATION OF YELLOW FEVER.

AS is well known, Dr. Freire claims that he has discovered a means of preventing yellow fever through inoculation by transferring the supposed germ of yellow fever through animals that possess the requisite receptivity.

His inoculations now are said to reach nearly seven thousand, and, according to the testimony of Dr. H. M. Lane, who states that he was able to follow up a large number of the inoculations reported, of these he was unable to find a single well-authenticated case of an inoculated person dying of yellow fever; but he found numerous instances of death from yellow fever among persons not inoculated living in the same yard, sometimes in the same house, with persons who had contracted this disease. Dr. Lane's testimony is of especial interest, as he himself submitted to the preventive inoculation, and he reports the details of the operation and its results in *The Boston Med. and Surg. Journ.*, June 10, 1886. Dr. Lane states that he arrived in Rio on the 16th of March last, during the prevalence of an epidemic of yellow fever. The next morning Dr. Freire

at eleven o'clock injected into his left deltoid 16 minims of his pure culture of the yellow fever germ of the twenty-second attenuation. At 5 P.M. he had a slight chill, followed by a feeling of general discomfort, nausea, frontal headache, pain in legs and lumbar region, the temperature going up with corresponding acceleration of pulse until 2 A.M., when it reached 102.7°. At this time he fell asleep, and slept for two hours, when he awoke perspiring. The pulse and temperature gradually declined until 7 P.M., when they had reached normal. The headache and other symptoms also left him feeling a little weaker than usual, without appetite, with a furred tongue, and skin slightly jaundiced. There was an almost complete suppression of urine for almost twenty-four hours. The restlessness, the hot dry skin, the thirst, nausea, headache, and muscular pain were all characteristic of the first period of yellow fever. During the next week he was constantly exposed to the disease in the affected districts, and came in contact with yellow fever patients without further trouble, while a friend, coming with him from the same place as himself a few weeks before, and passing a single night in Rio, had taken the yellow fever and died.

Of course the escape of a single subject of inoculation from yellow fever is of little value, but taken together with the seven thousand inoculations which also have been claimed in each case to have prevented the disease, the escape is too marked to have been a mere coincidence.

In a report as to the results obtained by Dr. Freire made to the Société de Biologie of Paris at a recent meeting, M. Rebourgeon stated that of 3051 subjects inoculated at Rio not one had died, whereas, in the same districts and houses, 278 non-vaccinated persons had succumbed to this disease. It is even claimed that when the inoculations are practised in the second stage of severe cases of this disease, recovery will almost invariably result. M. Rebourgeon stated that he had frequently inoculated himself with attenuated virus, and was so convinced of its protective power that he had exposed himself without hesitation to the disease, and he even offered to undergo inoculation with the yellow fever itself. He presented a specimen of the attenuated virus to the Society for examination, and a commission consisting of Brown-Séquard, Cornil, Duval, Bourquelot, and Maurel, were appointed to study the method and value of these inoculations.

We believe that there is at present a bill be-

fore Congress which has for its object the investigation of the truth or falsity of the claim advanced by Dr. Freire as to his power of preventing yellow fever. If this is so, we can only hope that it will pass, and the subject be disposed of one way or the other.

SULPHATE OF SPARTEINE.

IN the *sarothamnus scoparius* are two bodies, sparteine and scoparine, which were both discovered in 1851 by Stenhouse. It was not, however, until 1879 that the medicinal properties of one of these alkaloids, sparteine, first attracted attention, although the genus to which these plants belong had long been known to possess diuretic properties.

Of these two substances, sparteine has attracted the most attention. Sparteine ($C_{15}H_{21}N$) is an alkaloid, which, in its pure and fresh condition, is an almost colorless, oily fluid, but which, through the action of light and the atmosphere, soon becomes colored brown. It gives all the characteristic alkaloidal reactions, and forms crystallizable salts, which are soluble in water. Of these, the sulphate is most readily soluble, and is the one which is most ordinarily met in the market. Sparteine is heavier than water; boils at 278° C., and has a rather pungent odor, recalling that of pyridine, with a very bitter taste. We have already, in a previous issue, described the methods for its isolation. Sparteine is not the diuretic principle of *scoparius*, but is an alkaloid which, according to Fick, Laborde, and Germain-Sée, when injected hypodermically in rabbits in doses of about 1 grain, produces increase of the pulse and the respiratory frequency, frequent disturbance of co-ordination and somnolence, and finally death, with convulsions, through paralysis of the spinal cord and inhibitory centres of the heart.

According to the researches of Mitchell and Schroff, sparteine is fatal to rabbits in the dose of 1 drop. Fick was the first to observe the paralysis of the pneumogastric produced by this alkaloid (*Archiv für Experimentale Path.*, Bd. i., p. 397), while he also noticed with it increased diuresis. In 1880, Raymond, in Vulpian's laboratory, made some experiments with sparteine, but he does not appear to have noticed its action on the heart. This action has been principally emphasized by the more recent researches of Laborde and Sée. Laborde (*Tribune Médicale*, November, 1885), from a number of ex-

periments made with the sulphate of sparteine, obtained by the method of Houdé, on rabbits, dogs, and frogs, claimed that sparteine increased the intensity and duration of the cardiac contraction apparently through a central action, and that in frogs, after cessation of respiration, the heart persisted in its rhythmical contractions. Sée has employed sparteine in therapeutics as a substitute for digitalis, and claims that while free from the disagreeable and dangerous after-action of digitalis, it increases the power of both the heart and pulse more strikingly even than digitalis or convallaria. When the heart is disturbed in its action, as in typhoid states and febrile conditions, sparteine is said to raise the vital energy of the entire organism and to regulate the pulsations of the heart. Sée has, however, never noticed any increase of the urinary secretion under its influence, a fact which seems almost inexplicable in the face of the enthusiastic statements which he makes as to its power of increasing the force of the ventricular contraction. According to Sée, sparteine is indicated when the pulse is feeble, irregular, or intermittent, and where, from some other reason, digitalis or the other cardiac stimulants are contraindicated. It may be given in doses of $\frac{1}{16}$ grain. It is claimed to produce no disturbance of digestion or of the nervous system. It is to be hoped that this drug will be subjected to very close investigation to confirm or disprove the claims which have been made for it, and establish its exact position in our *matéria medica*.

HOPEINE.

THE manufacturers of hopeine appear to have themselves not clearly decided as to what the exact composition of hopeine ought to be. We have already called attention in these columns to the fact that hopeine seems principally to be morphine. This has been proved by the examination of a large number of independent observers. We have also referred to the fact that it has been found by Dr. Paul to contain cocaine, and Dr. Paschik, in the *Pharmaceutische Post*, April 17, 1886, now believes that he has proved that hopeine is a mixture of a substance which is either morphine, or absolutely identical with it, and another base which is soluble in ether, and which is much more powerful than morphine, and which differs from it in its action on the organism. This latter substance, which responds to all the tests for alkaloids in its

physiological action and chemical tests, appears to be hyoscine.

AN IMPROVED ELECTRIC BATTERY.

WE have received from The Electro-Medical Battery Company, of Kalamazoo, Michigan, an example of their Improved American Pocket Battery. This is in its construction based upon the French Gæffe, or bisulphate of mercury battery, its chief difference being in a very great improvement of the cell, which is closed, instead of open, as in the original.

The great drawback with these batteries is that they cannot be made to yield slowly interrupted currents, but they are much cleaner, more portable, and more easily managed by the ignorant than are the acid batteries. The workmanship of the American battery, so far as inspection can go, is good. It has well stood what tests we have been able to give it, and certainly affords a powerful current.

Reports on Therapeutic Progress.

ANEURISM OF THE THORACIC AORTA TREATED BY GALVANO-PUNCTURE.

At the meeting of the Clinical Society of London, held May 14, 1886 (*Medical Press*, May 19, 1886), DR. CHURTON read notes of a case of thoracic aneurism treated by galvano-puncture.

A strongly-built man, æt. 45, had in 1880 an aneurism which protruded through the left chest-wall. He was then in the Leeds Infirmary, under the care of Dr. Clifford Allbutt, and was treated by iodide of potassium (afterwards continued for three years), and by galvano-puncture upon two occasions. After each puncture pulsation ceased for two or three days, but finally remained as before. The aneurism, however, did not increase in size until last year. In June, 1885, he was admitted under the care of Dr. Churton, a second tumor having appeared in front of the lower part of the sternum. This grew rapidly. With Dr. Allbutt's concurrence, Mr. Teale, who had operated upon the patient previously, applied the galvanic needles, fifteen cells of Leclanché's battery being used for twenty minutes. Blood-débris ran from the negative puncture. The pulsation ceased, but returned on the fourth day. The operation was repeated on October 2 with like result. He

began about this time to expectorate two or three drachms of blood-stained mucus daily. On October 27 galvano-puncture was used for the third time. The tumor was tympanitic for a few hours, but did not cease to pulsate. On November 9 it was so much increased in size and its walls were so thin that a fourth puncture was made, Dr. Griffith, the resident medical officer, operating in the absence of Mr. Teale. The current was passed for twenty minutes. Pulsation entirely ceased, and the patient seemed to have gained a respite, but suddenly died twenty minutes after the operation from rupture into a bronchus of the first aneurism, which had hitherto given no new sign except the very small quantity of bloody sputum. At the autopsy, an erosion, half an inch in diameter, almost blocked up by a clot described below, was found in the upper division of this sac. Except in the arch, the aorta was only moderately atheromatous. One testis had undergone fibrosis. The orifice of the first aneurism was about an inch in diameter; the wall of the sac was as firm as cartilage. The middle of the sac was occupied by a firm clot larger than a cricket ball; the lower part of the sac was lined by laminated clot, thin around the orifice, gradually becoming thicker above, and quite smooth. The upper aspect of the central clot was rough. A fissure between the wall and the clot connected the two chambers of the primary sac. It seemed that after the deposition of clot upon the entire sac, with closure of the upper part by formation of a very thick layer, the layer had been stripped from the roof of the sac by the blood which found a way through the fissure, and then enlarging this part of the sac formed a projection on the exterior of the chest. A constriction in the sac, marking the position of the large mass of clot, suggested this view. The growth of this sac was arrested by the firmness of its wall except at two points. An orifice a third of an inch in diameter existed at the lower part of the upper division, just outside the chest. This led to a second sac, the walls of which were soft, and its interior irregular, except where the sternum, quite uninjured, formed its limit. The front wall was composed merely of skin, and irregular bands or trabeculae of connective tissue of varying thickness, disposed like the carneae columnae of a right ventricle. This was the cavity in which the galvanic needles had been inserted. It contained no laminated clot; the surface was smooth and uninflamed. A soft jelly of pinkish color, too fragile to be preserved, and

some blood-débris were contained in the cavity. The cessation of pulsation had been due to entanglement of this clot in the short, narrow canal leading from the orifice into the cavity. The temporary cessation of pulsation noted in the large aneurism five years ago was probably due to a similar entanglement of soft clot in the narrow fissure above mentioned. The formation of such a clot and of blood-débris in the cavity of a perfectly open aneurism, one would suppose to be not free from danger.

ASEPTOL.

Orthoxyphenylsulphurous acid is the somewhat cumbersome name for a compound destined for popular use, and this fact may to some extent excuse the adoption of the more suggestive title of "aseptol" for an article that was to be put into the market as an antiseptic. Both these names are, however, now to be displaced in favor of "sozolic acid" (from *σωξω*, I preserve), M. SERRANT being anxious to avoid an erroneous inference from the termination in "ol" that the compound is of a phenol character, and to indicate that it has the properties of a definite and well-characterized acid (*Comptes Rendus*, May 10, p. 1079).

Sozolic acid, in fact, besides being soluble in water in all proportions, is described as combining perfectly with bases to form salts, and it is to its capability of saturating ammoniacal bases that its antiseptic action is attributed. The difference in chemical action between carbolic acid and sozolic acid is seen in the fact that red litmus-paper placed in a flask containing ammonia gas, after the introduction of sufficient carbolic acid to mask the odor of the ammonia, is turned blue, while, if sozolic acid be used, the red litmus does not change color. M. Serrant also points out that sozolic acid is an "ortho" compound, and that the antiseptic properties of compounds in the aromatic series, which includes the best antiseptics, seem to depend upon their capability of forming an anhydride that is only yielded by the "ortho" compounds; for instance, orthobenzoic acid, or salicylic acid, is antiseptic, while paraoxybenzoic acid is not. M. Serrant claims that sozolic acid exceeds salicylic acid in antiseptic power. This he accounts for by comparing the formula of sozolic acid ($C_6H_4(OH.SO_2OH)$), which contains the sulphuryl radical, with that of salicylic acid ($CHOH.COOH$), where its place is taken by the carbonyl radical. The superiority of sozolic acid over competing anti-

septics in other respects is also claimed, to an extent, indeed, that is rather unusual in a paper read before the Academy of Sciences. —*The Pharm. Journal and Trans.*, May 29, 1886.

A NOVEL PROCEDURE FOR THE REMOVAL OF SUBGLOTTIC LARYNGEAL GROWTHS.

At a recent meeting of the American Laryngological Association, DR. WILLIAM JARVIS read a description of a novel procedure for the removal of subglottic laryngeal growths (*Med. News*, June 12, 1886).

J. C., aged 35 years, consulted him on March 22, 1882, for the relief of a difficulty of speech and of breathing. The trouble with the voice was noticed two years before, the difficulty in speech appeared one year before coming under observation. The laryngoscope showed a mass of papillomatous tissue occupying the cavity of the larynx. The vocal cords and ventricular bands were not involved. An attempt was made to seize the growth during phonation, with the Mackenzie forceps, but only a few pieces were removed. The *écraseur* was then tried, but it was found impossible to use this instrument on account of the wire being seized by the spasmodic contraction of the vocal bands and displaced. Chromic acid applications were then tried, but although the growth was touched, it was found impossible to limit the application to the diseased structures. The patient then disappeared, and did not return for a year. His condition was then much worse, and the difficulty of breathing greatly increased.

Dr. Jarvis then determined to try the following plan, and, if this failed, to remove the growth through an opening in the windpipe. A forceps, similar to the Mackenzie instrument, but heavier, was secured. Through the tips of the blades holes were drilled, and through these was passed a piece of No. 00 piano-wire, which was conducted through a second opening at the angle of the blades and out to the handles, where it terminated in a loop, into which the extremity of the index-finger could be placed. When the blades were separated, this wire formed a cross-bar, uniting their extremities. When the blades were closed, the loop of wire could be drawn up by the finger. The operation was performed without an anæsthetic. The tongue was depressed, and, with the aid of the mirror, the forceps was introduced into the cavity of the larynx. The mirror was

then removed, and the forceps carried down to the glottis, through which the tip of the instrument was forced with considerable trouble, on account of the spasm. The instrument was carried into the trachea sufficiently far to be sure that it was below the attachment of the growth. The blades were then separated, and pressing against the anterior wall of the larynx, the instrument was gradually raised until the wire was caught. The blades were then closed and clamped, the loop of wire drawn in, and the forceps removed, bringing with it a growth. The laryngoscope showed a second growth, which was removed in the same way. Breathing was at once rendered easy, and the speech became natural. The patient said that the presence of the forceps, although uncomfortable, caused no pain. This is the only case on record of the removal of a subglottic tumor without anæsthesia and without an opening into the larynx.

THE TREATMENT OF STRICTURE OF THE URETHRA BY ELECTROLYSIS.

At a recent meeting of the Royal Medical and Chirurgical Society a paper on this subject was read by W. E. STEAVENSON, M.D., M.R.C.P., and W. BRUCE CLARKE, M.A., F.R.C.S. (*Brit. Med. Journ.*, May 29, 1886). The more extensive use made of electrolysis in surgery and gynæcology abroad, and especially its successful employment in the treatment of stricture of the urethra, had induced the authors to undertake a series of observations to test the accuracy of the reports which had reached England. Their results bore out in every particular the results of success they had received from America. Electricity, on account of its power of splitting up compounds into their chemical elements, could be used as a substitute for ordinary caustics to the human body. It could be used with especial advantage to parts difficult of access, such as the male urethra and the uterine cervical canal, and it could also be applied to these and other regions where the application of other caustics was attended with a certain amount of danger. Its effects could be limited to the points touched by the electrode. The caustic effect could be arrested, or not commenced until the applicator, in the form of the electrode, was *in situ*; and the duration and extent of the caustic action were entirely under the control of the will of the operator. The treatment of stricture of the urethra by this method was the most simple, and, per-

haps, the most striking in its results, and had, therefore, been selected as the first on which to collect and report observations. In this paper, the details were given of six cases of stricture of the urethra treated by electrolysis, the *modus operandi* was explained, the steps of the operation were given, and the advantages of this method of procedure were summed up. There was usually no bleeding. If hemorrhage did occur, it was accidental, and usually showed that too strong a current had been used; no anæsthetic was required. If pain or discomfort were produced, it was trifling. The patient could, in the case of slight strictures, pursue his ordinary occupation during the period of treatment. No antiseptics were required, as the process itself was aseptic. In the majority of cases, there was no contraction or return of the stricture. Eschars produced by caustic alkalies were said to heal with less contraction than wounds produced in any other way, and electrolysis with the negative pole of a battery was a means of applying the same destructive action as was caused by the caustic alkalies to parts difficult of access in a way which was impossible by any other method. Probably, other chemical decompositions and combinations took place at the negative pole besides those characteristic of the caustic alkalies, but they had not, up to the present time, been thoroughly made out.

MR. BERKELEY HILL was much interested by the paper, but was sorry to say that he could not find the conclusions of the authors quite satisfactory. The cases had been related, after the manner of the American writers on the subject, without enough detail as to the size, nature, and position of the stricture. One case had suffered from stricture, more or less, for twenty years; he had often been relieved for a time by ordinary dilatation, and then had slowly relapsed. The relief given by Dr. Steavenson and Mr. Bruce Clarke dated only from about eight months ago, and he expected that his discomforts would return; at any rate, at present, there was no proof of a cure. It was universally admitted that, by patient pressure, a larger catheter could be passed; but he thought the authors had hardly made due allowance for this in their account of the increased size of the electrical bougies passed, which might perhaps be due to patience as much as electricity. He had himself carefully considered the American cases that Dr. Newman had published, and had followed his plan in treating one case of his own. There was stricture,

two inches and a half from the meatus, probably behind an old urethral abscess; he could see clearly with an endoscope, which he was sorry the authors had not used. He passed a needle, which formed one pole of the electric circuit, into the scar-tissue, and could see, with the endoscope, that nothing more happened than the occasional liberation of a bubble. The patient felt no pain at all, except on making and breaking the current; he measured the current's strength by the patient's feelings. After fifteen minutes' application of the current, he found the stricture enlarged from 19 to 20 of the French scale. After further treatment, in the same manner, it gradually contracted from 20 to 16; and as cure seemed very unlikely by such a process, he resorted to other methods, and found no difficulty in widening it.

MR. F. SWINFORD EDWARDS had treated a case, with the help of Dr. Steavenson. He had first seen the patient two and a half years ago, when he found three strictures, two penile and one subpubic, of size No. 12 (French); these he gradually dilated to No. 25. For two years the patient was lost sight of, and then returned with three strictures, distant $\frac{3}{8}$ inch, 4 inches, and $5\frac{1}{2}$ inches from the meatus, admitting only No. 4 (French). Dr. Steavenson applied a No. 3 electrode and current of from 5 to 8 milliamperes; this did not pass; but the flow of urine was improved, and, a few days later, a bougie, No. 10, could be passed; and, after a few weeks under electrical treatment, a bougie, No. 26 steel or No. 28 pewter, could be admitted. Whether it was to be called strictly a cure or not, it was certainly satisfactory in enabling the patient to get about and do his work; and his case was a bad one, which would otherwise have needed treatment with an Otis's dilating urethrotome. He hoped the treatment would be further investigated in hospital cases.

MR. G. BUCKSTON BROWNE thoroughly agreed that it would be a very good thing if the practised hands of the seniors in the profession could be brought to try this method; for there was hardly any point in which more experience was needed than in estimating and accurately diagnosing stricture. He was inclined himself to attribute the results embodied in the paper to the dilatation, not to the electricity; else why was it found advisable to use gradually larger and larger electrodes? Even pressure, without passage of a catheter, often did much to facilitate the passage of urine. He had considered Dr. Newman's cases with some care, and could

not help calling attention to one remarkable point in them, that they were, every one of them, successful.

DR. STEAVENSON observed that very little of the reply fell to his share. He was not familiar with the endoscope which Mr. Berkeley Hill had shown. In Mr. Hill's cases, he understood there had been puncture, and he certainly was not surprised that contraction had followed. They had used bougies, of gradually-increasing size, to keep in contact with the walls of the urethra.

MR. BRUCE CLARKE said he had been quite prepared to meet the two chief objections that had been urged: that the cases were not really of organic stricture; and that they were not really cured. As to cure, he was bound to admit that the operations had been performed last August, and not treated since; they were under observation, and had not relapsed; only time could prove their ultimate cure. As to the point that they were spasmodic strictures, he could not admit it; in one of the cases, there had been extravasation of urine; at first, nothing could be introduced, but, after electrical treatment, he could pass No. 11 (English), and that was a success as great as any after a cutting operation.

The editors of the *British Medical Journal* for the same date comment on this mode of treatment as follows:

"The treatment of urethral stricture by electrolysis is one of which there is, as yet, very little practical knowledge in England; and we confess we were very glad to see it so well brought forward as it was last Tuesday evening by Dr. W. E. Steavenson and Mr. Bruce Clarke, at the Royal Medical and Chirurgical Society. Interest in the subject was first aroused by one of the daring attempts of American surgery, made by Dr. R. Newman, of New York, who published, about eighteen months ago, 'Tabular Statistics of One Hundred Cases of Urethral Strictures treated by Electrolysis, without Relapse.' It would have appealed, perhaps, even more strongly to those who believe in the fallibility of human nature, if there had been one or two relapses. The fashion of operating admits of many small variations; but the essential points are, that one pole of the battery shall be of metal, and in contact with the surface of the stricture, and the other widely spread out by means of a pad over a considerable surface of the body, the back, or elsewhere; and that between these poles a current of considerable strength should be passed. It is found most successful and least uncomfortable that the

negative pole should be in contact with the urethra; the positive, with the body. A current may be passed which is strong enough to act upon the stricture without giving any discomfort, except, perhaps, at the moments of making and breaking. What the exact action of the current upon the cicatricial tissue may be we are hardly in a position to say, though the actual watching of the process by means of an endoscope, as practised once by Mr. Berkeley Hill, may throw more light upon it. It is covered, at present, by the word 'electrolysis,' of which, when applied to fibrous tissues, we must admit that the limits are somewhat indistinct. At any rate, it is alleged that not only does the resistance of the stricture give way, but that more or less of the tissue which forms it is turned into a slimy mass of broken-down epithelium, and so disappears, without leaving a contracting cicatrix. The *a priori* impression is certainly strong that, where tissue has disappeared, there must be a cicatrix; and that, if there is a cicatrix, it must contract, sooner or later. Those who have practised electrolysis will gain a much more attentive hearing and a more zealous following when they can show a longer maintenance of good results than the eight months which have elapsed since Mr. Bruce Clarke's operations. When the malady is chronic, it naturally needs a long time to judge of the cure; but, at the same time, the habits of scars, due to different causes, are known to vary greatly in contraction, and it is possible enough that there may be less contraction after electrical action than any other, even than those from caustic alkalies. And, further, we are not yet experienced enough to assert how completely similar or dissimilar to an ordinary cicatrix this process of electrolysis may be. That it deserves trial from the older and most skilled hands there would seem to us little doubt; and we can imagine it most convenient that the electrical necessities should be managed by the younger students of that somewhat difficult class of instruments."

SALOL.

"Salol" is the name of a new compound prepared by PROFESSOR NENCKY, which is said to possess powerful antipyretic and antiseptic properties, and to be capable of replacing advantageously sodium salicylate in cases where that salt is badly tolerated. Salol is a derivative of salicylic acid, in which one atom of hydrogen is replaced by the phenol group. It is described as a white powder,

having a faintly aromatic odor, and as it is almost insoluble in water, perfectly tasteless. Professor Nencky states that in the organism salol undergoes a simple splitting up into its two components, without any further modification, both being found in the urine. The decomposition appears to be affected by the pancreas, since the powder brought into contact with comminuted pancreas is at once decomposed. Assuming, therefore, that the decomposition first takes place in the duodenum and not in the stomach, Professor Nencky thus explains how it is that its administration is not followed by disagreeable after-effects. The dose is about the same as that of salicylate of sodium, but as much as 4 grammes (60 grains) may be given daily. The urine, after its administration, becomes very dark, almost black, as after the ingestion of carbolic acid, of which salol contains thirty-eight per cent. No toxic symptoms, however, are produced, probably because the phenol passes through the stomach in combination and is not absorbed. The antiseptic properties of salol are also said to render it useful in the treatment of putrid affections of the mucous membrane.—*Pharm. Journ. and Trans.*, May 29, 1886.

THE VALUE OF LANOLIN.

Lanolin appears to be more and more attracting the attention of physicians as a means of applying various substances in the form of ointments to the skin and insuring their absorption. That it is absorbed more readily than either lard or vaseline has been claimed for it, and this has been proved to be a fact by some experiments made under the supervision of Dr. H. W. Blanc at the Skin and Cancer Hospital, New York, and reported in the *Journal of Cutaneous and Venereal Diseases* (June, 1886) by DR. GEORGE HENRY FOX. The method employed in these experiments was to mark off on the anterior surface of the forearms of a young girl spaces four by six inches in extent. Upon the space so marked on the right forearm 15 grains of lard were rubbed for fifteen minutes. The left forearm was treated with lanolin in the same manner. The lard was softened more quickly by the heat of the skin and hair, and was spread much more rapidly over the surface.

With as nearly an equal amount of pressure as it was possible to give, the lanolin was found to redden the skin more readily than the lard. At the expiration of the fifteen minutes, the greasy matter remaining upon forearm was carefully collected by means

of a spatula and weighed, with the following result :

Weight of lanolin used.....	15 grains.
“ “ “ removed from skin.....	5 “
“ “ “ absorbed.....	10 “

Weight of lard used.....	15 grains.
“ “ “ removed from skin.....	10 “
“ “ “ absorbed.....	5 “

We see, therefore, that while two-thirds of the lanolin disappeared during the rubbing, only one-third of the lard was lost.

To test the comparative rapidity of absorption of lard and vaseline, similar spaces were marked off upon the back of a young man upon either side of the spine and beneath the scapulæ. Fifteen grains of each were rubbed in for fifteen minutes, and the amount scraped off was weighed as before, and with the following result :

Weight of lard used.....	15 grains.
“ “ “ removed from skin.....	8½ “
“ “ “ absorbed.....	6½ “

Weight of vaseline used.....	15 grains.
“ “ “ removed from skin.....	9½ “
“ “ “ absorbed.....	5½ “

We note in this experiment that the lard was more readily absorbed than the vaseline, although the difference was not as marked as in the case in which the lard and lanolin were tested.

As a proof of the rapid absorption of drugs by means of lanolin frictions, Liebreich states that a solution of bichloride of mercury in lanolin, of a strength of 1 to 1000, will produce a metallic taste in the mouth, after being rubbed into the skin. Dr. Fox has rubbed repeatedly upon his own skin, as well as upon others, a lanolin ointment of ten times this strength, and failed to get any gustatory proof of its absorption. In some subjects of his experimentation, however, the peculiar metallic taste in the mouth has been noted, but it is possible that a similar effect might have followed the use of lard or even vaseline. As an improvement in our present method of endermic medication, particularly in the inunction cure of syphilis, lanolin may prove to be of great value, but time will be required to settle this point.

Without discussing further the theoretical use of lanolin, let us consider the question as to its practical value when tested in the treatment of skin-diseases. Since the first importa-

tion of lanolin from Germany, Dr. Fox states that he has been using it in nearly all cases in which he had occasion to prescribe an ointment, and he failed to see any remarkably beneficial effects from its use. On the contrary, it has proved objectionable in some instances on account of its color and consistence, and, in certain cases of acute inflammatory disease of the skin, it has not been found to be as bland as one has been led to expect. When he used a lanolin ointment upon one side of the body, and a lard or vaseline ointment upon the opposite side, the patient has usually expressed a preference for the latter, and in no case has the rapid absorption of the former been so marked as to attract notice.

In conclusion, his views respecting lanolin may be summed up in the following statements:

1. Lanolin is more readily absorbed by the skin than any other fatty substance.
2. As a basis for ointments, it is useful when an effect upon the deeper skin or upon the whole system is desired.
3. On account of its firm consistency, it is advisable to mix with it a certain amount of lard, especially in cold weather.
4. When applied to a highly-inflamed skin, lanolin may not prove as bland as *fresh* lard or *pure* vaseline.
5. Considering its recent introduction, its questionable superiority, and its present cost, it cannot be recommended as yet as the best basis for all ointments.

THE TREATMENT OF ERYSIPELAS WITH CREASOTE.

DR. H. J. FOX, writing in the *St. Louis Medical Journ.*, May, 1886, claims that creasote may be regarded almost as a specific in the treatment of erysipelas. His manner of application is to keep the parts constantly covered with cloths wet with a solution of 6 to 20 drops to the ounce of water. In ulcers or wounds it may be used in the form of a poultice by stirring ground elm into the solution. The strength to be regulated according to the virulence of the attack. Ordinarily, 10 drops to the ounce is strong enough for the cutaneous form of the disease, and in dressings for wounds or recent injuries. If the inflammation threatens to spread rapidly, it should be increased to 20 or more drops to the ounce of water.

The antiseptic properties of this remedy render it of additional value, as it will certainly

destroy the tendency to unhealthy suppuration, and thus prevent septicæmia.

In the treatment of hundreds of cases of erysipelas, according to Dr. Fox, but a single fatal case has occurred, and that one in an old and depraved system. In the less violent attacks no other remedy was used, but where constitutional treatment was indicated, the usual appropriate tonics were prescribed.

PARALDEHYDE AS AN ANTIDOTE TO STRYCHNINE.

The property of paraldehyde of greatly reducing the activity of the spinal cord as a reflex centre, led PROF. BOKAI (*Pharm. Post*, April 24, 1886) to test paraldehyde as an antidote to strychnine-poisoning. The results of his experiments made on rabbits, cats, and dogs were almost invariably favorable. The animals first received a non-fatal dose of paraldehyde, and then an absolutely lethal dose of strychnine was given. In no case did the strychnine produce death. If, however, doses of paraldehyde, which are themselves fatal, were given to animals, the largest doses of strychnine were not able to remove the poisonous symptoms of the paraldehyde or to delay the fatal processes. It would appear, therefore, that the antagonism between these two drugs is only one-sided. Since the hypnotic action of paraldehyde is much more rapidly produced than the poisonous symptoms of strychnine, the hope is not unreasonable that paraldehyde, if given soon after the ingestion of a poisonous dose of strychnine, might serve to antagonize it. Prof. Bokai, strange as it may seem, does not appear to have made any experiments in this connection. Should paraldehyde be proved to be an antagonist of strychnine, its use for this purpose is almost without risk, since, it is free from the unfavorable action on the heart possessed by chloroform and chloral, which also have some antagonistic power to strychnine.

A NEW METHOD OF MEASURING THE TEMPERATURE IN CHILDREN.

All physicians know how difficult it is in certain cases to take the axillary or rectal temperature in children. One of the principal difficulties is in the restlessness of the child, which prevents it from keeping quiet long enough to obtain a record of the temperature. DR. FILATOFF (*Revue Mensuelle des Malad. l'Enfants*, May, 1886) proposes a

method which, while it is true fails in giving an absolutely exact temperature, serves, at least, to give an estimate which is sufficient in the majority of cases. This method consists simply in observing not the ascent of the column of mercury, but, on the contrary, its fall. He first causes the mercurial column to rise considerably above the estimated temperature by rubbing the bulb with the hand, or in any way warming it. When the temperature reaches 107° F. he rapidly passes the instrument into the axillary space, previously laid bare, and notes the distance which the column falls in one or two minutes. He thus obtains a temperature which almost exactly approaches the true temperature of the patient.

CLIMACTERIC DIABETES.

MR. LAWSON TAIT calls attention in the *Practitioner* (June, 1886) to the fact that in a large majority of cases of eczema of the vulva at the climacteric period the disease will be due to the presence of sugar in the urine. He states that he has not yet come across a case of this kind in which he has failed to find sugar. The disease seems to begin at or near the arrest of the menstrual function, and to extend over a period of several years, then terminating in all probability by nature's own process. The sufferings of the patient are, according to Mr. Tait, much diminished and the duration of the disease probably shortened by the free administration of opium. The eczema and pruritus are to be relieved by ointments containing such substances as will arrest fermentation in sugar. Of these, he believes that the old-fashioned hepar sulphuris is the best. He also has used a lotion of hyposulphite of sodium 1 oz. to a quart of water with immense advantage, but it is only by frequent ablutions and syringing that comfort can be so obtained. Opium he uses in 1 gr. dose three times a day and 3 grs. at bedtime; this quantity may be gradually diminished as the patient improves. The chronic vaginitis, which will frequently be found to complicate such cases, may be cured by swabbing out the vagina two or three times with strong carbolic acid, together with an application of oleate of zinc.

NERVE-STRETCHING FOR LEPROSY.

At a recent meeting of the Harveian Society, DR. E. DOWNES read a paper on Nerve-stretching for Leprosy, founded on a large ex-

perience in nerve-stretching for leprosy and sciatica in Kashmir (*Lancet*, June 5, 1886). Of forty-two cases recorded, thirty-two were well-marked cases of leprosy, and in all these anæsthesia of the lower extremities was an early and well-marked symptom. It was sometimes absolute and sometimes partial, being occasionally accompanied by absence of pigment or by tubercles, the latter occurring more commonly on the face, and often with severe neuralgia of the deeper parts. Ulceration commonly occurred in course of time, and especially in the feet, possibly beginning in some cases as a result of direct injury to the anæsthetic tissues, and often extending to complete destruction of the parts. Some of the cases recorded had lasted from one to seven years, and longer in two instances. The operation was done through a three-inch incision at the back of the thigh, the finger being hooked round the nerve, and the limb lifted from the table. All the cases were benefited by the operation, and in some the ulcers healed completely, and sensation was nearly restored to its normal state; the latter generally took place in the first few days. This success was fully appreciated by the patients, who repeatedly sent their friends suffering from leprosy to be similarly operated upon. The author observed that an exclusive diet of dried fish was not always an element in the production of the disease, many of his cases coming from districts where none was obtainable. He believed the ulceration to be due to peripheral neuritis, consequent upon some altered condition of the blood, for which the presence of bacilli might be answerable.

DR. BUZZARD observed that these cases afforded direct proof of the relation of leprosy to affections of the peripheral nerves, and not to those of the spinal cord. The neuralgia and the immediate results of stretching were strong evidence in this direction. Although few English medical men had to deal with leprosy, he thought that a practical knowledge of the disease would lead to more thorough investigation of other forms of degeneration of nervous origin. Leprosy was at one time endemic in England, and he suggested that remnants and traces of it might still be existent in the form of localized atrophy or leukoderma.

DR. DOWNES, in reply to questions, stated that in one of his cases sensation had continued good for two years; none others had been under observation for so long a period. He had obtained uniformly good results in nerve-stretching for neuralgia and sciatica.

*SUCCESSFUL EXTIRPATION OF THE
SPLEEN.*

La Gazzetta degli Ospitali (May 23) reports a case from the surgical clinique of the University of Genoa in which PROFESSOR A. CECI removed a greatly enlarged spleen. The patient, an imperfectly developed and very thin girl, aged 17, weighing 40 kilogrammes, and 1.40 metre in height, with very small pulse, had had an abdominal tumor from birth. The transverse diameter of the tumor was 34 centim., the vertical 23 centim., and the circumference about 64 centim. The anterior surface was smooth and convex, the margins sharp and fissured. The posterior surface presented a large lobe on the left. The abdominal walls were very flaccid, so that the tumor could be completely rotated vertically and transversely, and also be pushed into the left hypochondrium, whence, however, the respiratory movements soon caused it to advance to the front of the abdomen. The liver was in normal position. The enormous size of the floating spleen interfered with the patient's movement and nutrition, and was an occasional source of very severe attacks of pain, radiating from the left hypochondrium to the præcordial region and the left upper limb, and attended with violent dyspnoea and insensibility. Extirpation having been resolved upon, it was performed on March 20, with strict antiseptic precautions. The incision in the linea alba from above downwards through the umbilicus was 23 centim. ($9\frac{1}{4}$ inches) in length. On opening the abdomen, serious signs of suffocation compelled the suspension of the operation for nearly thirty minutes. Anæsthesia having been commenced with bichloride of methylene, chloroform was substituted for it. A triple catgut and carbolized silk ligature having been applied to the pedicle, it was dropped in. The peritoneum was sutured separately. The abdominal walls were brought together by three metallic points, after Billroth's method. The splenic artery was larger than the subclavian. The whole operation, including the interruption, lasted an hour and a quarter. Violent delirium and nervous phenomena simulating angina pectoris soon followed. For two days the pulse could not be counted, and the respiration varied from 70 to 80 per minute. The treatment was by oxygen and nutritive clysters. The wound was first dressed on the eighth day, and almost the whole of the wound-tract suppurated. In spite of strict antiseptic treatment erysipelas supervened, and yet the patient recovered. On

April 22 (thirty-one days after the operation) her condition was reported as excellent, only a small superficial wound remaining. The extirpated spleen, with the contained blood, weighed 2400 grammes, equal to 37,036.8 grains, or 77.16 ounces. A courteous note just received from Professor Ceci states the patient is in good health; pulse 80; respiration 22; weight increasing rapidly; complexion florid.—*Lancet*, June 5, 1886.

*ON THE TREATMENT OF NÆVUS BY
EXCISION: CLINICAL ANALYSIS
OF 564 CASES OF NÆVUS.*

At a recent meeting of the Clinical Society of London, MR. R. W. PARKER (*Brit. Med. Journ.*, June 5, 1886) read notes of a case of suppurating nævus situated on the back of a child, aged 10 months. It was of the mixed variety,—that is, partly cutaneous and partly subcutaneous. When first seen, it measured $2\frac{1}{2}$ by $2\frac{1}{4}$ inches, and was considerably raised above the surface. The central (cutaneous) portion was bright red in color; the subcutaneous (raised) portion extended several inches around this central portion. It was stated that it had rapidly increased in size within the last few weeks. The nævus was excised through an elliptical incision, the edges of which were subsequently brought together with catgut sutures, and then coated with iodoform collodion. The child made a rapid recovery, and left the hospital within three weeks. After removal, the nævus was cut into, and found to contain about one ounce of blood-stained pus. The interior of the sac was rough and corrugated, and divided into numerous loculi by strands of shreddy tissue running across the cavity. This case was selected as being unusual on account of the suppuration within the sac; and because, on account of the size and of the largely subcutaneous nature of the nævus, it well illustrated the adaptability of excision as a means of treatment for this (mixed) variety of nævus. Mr. Parker divided nævi into three chief classes,—the cutaneous, the subcutaneous, and the mixed variety, the last-mentioned being by far the most numerous. For cutaneous nævi, one of the simplest and most efficacious methods of treatment was the application of fuming nitric acid; for the subcutaneous variety, he advocated electrolysis or excision; for the mixed variety, excision was regarded as the surest and most speedy, as well as the most radical method. The paper

concluded with an analysis of 564 cases, and a description of the histological characters of nævus, microscopic specimens of which were exhibited.

MR. GOLDING-BIRD had found good results from the "barbarous practice" of ligature. He took exception to the sweeping statement that excision should be applied to all cases. Treatment must depend on the situation and characteristics of the tumor. Ligature was much preferable in cases which occurred in out-patient practice. A less scar ensued after ligature than after excision, and this latter method was inapplicable to nævi of the scalp. In nævi below the lower eyelid, and at the end of the nose, the galvanic cautery alone could be employed, and neither ligature nor excision could be, in this situation, adopted. Properly employed, the cautery left a minimum of scar, and the least amount of contraction. The vascular tissue was gradually supplanted by cicatricial tissue, the contraction of which cured the rest of the vascular tissue. In all such treatment, the cautery should invariably be applied circumferentially at first; then this outer part, cicatrizing, nearly strangulated the central portion, which might be easily dealt with, at another sitting, by cautery, ligature or excision. Mr. Golding-Bird had lately employed this practice very often.

DR. WARD COUSINS asked if it was not possible that the specimen exhibited by Mr. Parker was undergoing spontaneous cure. The knife was the best treatment in some cases, but in others the worst. Some nævi disappeared under any treatment whatever. Nævi affecting the lids and nose, etc., ought to be very slowly treated; he himself treated them piecemeal, by frequent and long-continued scarification, by a double-edged cataract-knife. He approved of the large use of the actual cautery, as for small nævi of the face, and now never employed nitric acid, and never used the ligature under any circumstances whatever.

MR. PARKER had formerly much experience in the use of the actual cautery. For nævi about the nose and eyelid, he employed electrolytic needles, passed from the interior of the mouth or nostrils, where practicable, so as to avoid scars. He advocated excision, as being a radical cure, and because the after-treatment was simple, especially when the edges could be brought well together; any ordinary mother could, after three or four days, attend to the dressing of the wound. The child whose case he had related had

probably had some injury to the nævus, in consequence of which it was suppurating.

CALOMEL AS A DIURETIC.

JENDRAFSIK, of Buda-Pest, noticed the diuretic action of calomel in a patient suffering from dropsy, who, for other reasons, was under mercurial treatment by friction, and by the internal administration of calomel in small doses. The treatment with calomel lasted for several days, when an abundant diuresis set in, and the dropsy disappeared. Since then Dr. Jendraftsik has repeated his experience in a large number of cases, always with success (*Gaz. Mtd. de Paris*, May 29, 1886). Calomel was administered in doses of 2 decigrammes (3 grs.) three or four times in the twenty-four hours. Larger doses caused diarrhoea, while gargles of potassium chloride served to prevent salivation. The diuretic action appears on the second day with such intensity that the patients are scarcely able to retain their urine; the polyuria may last from five to fourteen days. He thinks that the calomel acts by an osmotic action, the liquid transuded from the vessels being absorbed by the production of an inverse current.

MANACA IN RHEUMATISM.

DR. J. BERGER (*St. Louis Med. Journ.*, May, 1886) adds his testimony to the evidence which is being rapidly accumulated as to the value of manaca in rheumatism. He writes that he commenced the use of manaca in rheumatism about five years ago, and claims that it has given better results than any other single remedy than he has ever employed, and is perhaps better than any combination of remedies. He has used it in all forms of chronic rheumatism with good results, and he has employed it so often in such cases that he has no doubt as to its possessing anti-rheumatic properties to a great degree. He believes that it acts by eliminating lactic and uric acids from the system and, by assisting digestion and assimilation, prevents their reforming in excess. He reports three cases in which its use proved of service.

THE FREQUENCY OF DISEASE OF THE UTERINE APPENDAGES.

From a paper on the above subject published in the *American Journal of Obstetrics* for June, 1886, DR. HENRY C. COE draws the following conclusions:

1. Ovarian disease is *not* as common as it has been represented, the surgeons and *not* the pathologists being responsible for the prevalence of the contrary opinion.

2. Because an ovary is partially diseased it does not follow either that its functions have been materially impaired or that its removal is imperative.

3. The expressions "cirrhosis" and "cystic degeneration," commonly applied to the ovary, are mischievous terms, which are too often used in justification of *unjustifiable* operations.

4. Actual disease of the tubes is far less frequent than is generally believed. Lesser degrees of inflammation, especially slight "catarrhal salpingitis," are seldom appreciable to the pathologist, still less to the surgeon.

5. Many of the symptoms ascribed to disease of the uterine appendages are really due to *localized peritonitis*, and will *not* be removed by a removal of the appendages.

6. The physiology of the ovaries and tubes is still imperfectly understood; their pathology must then remain *sub judice*, and operations for their removal, on the ground of limited disease alone, must be regarded as largely empirical. To which he adds the prediction:

7. The present enthusiasm in this country in favor of Tait's operation will not endure, because it will eventually be discovered that the number of *permanent* cures is entirely out of proportion to the number of operations.

THE TREATMENT OF CONSTIPATION BY MASSAGE.

In the introductory lecture to the course of Pharmacology and Therapeutics delivered at the Westminster Hospital Medical School, DR. MURRELL referred at some length to the good results recently obtained in the treatment of habitual constipation by means of massage. The method he employs is a modification of that originally introduced by Mezger and Von Mosengal. *Pétrissage* of the abdomen is of essential value, the manipulations being performed in the direction of the ascending transverse and descending colon. It is usually associated with various forms of *tapotement*, for the production of which the open hand, the partly-closed hand, or its radial or ulnar border, may be employed. Vibratory movements are resorted to in obstinate cases, and it was stated that the action was usually remarkably prompt and certain. The best results were obtained

in cases of constipation associated with obesity, especially when the patient was unable to take much exercise. It probably acts in three ways,—(1) by increasing the intestinal and other secretions; (2) by stimulating the peristaltic action of the intestines; and (3) mechanically, by pressing the accumulated fæces towards the rectum. The treatment is well known on the continent, and will, doubtless, in time be generally recognized in this country.—*Medical Press*, May 19, 1886.

SUGAR AND CORROSIVE SUBLIMATE AS A FIRST DRESSING IN WAR.

DR. HEIDENREICH, in a paper published in the *Vratch* (Nos. 19 and 20), strongly recommends as a first dressing on the field of battle a mixture of corrosive sublimate with powdered sugar, in the proportion of 1 to 1000. It is important that when this is prepared the sublimate should be evenly distributed, and this is easily effected by first dissolving the mercurial salt in a little spirit, and then carefully rubbing up the sugar with it. The spirit ultimately evaporates, and leaves a powdered mass of uniform composition. A little packet is supplied to each soldier, containing a capsule, in which is 5 grammes of the mixed powder,—i.e., $\frac{1}{200}$ of a gramme of sublimate,—for the purpose of sprinkling on the wound; also a good-sized piece of gauze impregnated with one-third per cent. of its own weight of sublimate by means of Bergmann's process, which consists of dipping it in a solution containing 10 parts sublimate to 500 glycerin, 1000 alcohol, and 1500 water. Some hygroscopic wadding is also supplied, and this, when inclosed between two folds of the gauze, forms a dressing measuring 650 sq. centim., which is large enough to cover a somewhat extensive wound. The whole is inclosed by means of a layer of varnished paper and a triangular bandage, which is fastened with two safety-pins. The author claims for this mixture of sugar and sublimate the advantage of being a particularly powerful antiseptic, and quite innocuous. Sugar, he says, is the best substance for diluting the sublimate, being itself somewhat antiseptic. This dressing has also the additional advantage of being suitable for use wherever water may be procurable. This, of course, is not always the case, and, where it is the source, is frequently in a marsh or pool of anything but hygienic appearance. Under these circumstances he advises that filtration should be resorted to, and consequently proposes that a kind of filter, consisting of flan-

nel impregnated with sublimate, should be included in the packets supplied to the men. The whole contents of the packet weigh only seventy-five grammes, and are exceedingly portable and inexpensive.—*Lancet*, June 12, 1886.

DIAGNOSIS OF GONORRHOEA IN THE FEMALE.

If there is any clinical truth in the statement put forward at a meeting of the Paris Obstetrical and Gynæcological Society by DR. MARTINEAU, a most important means of forming a true diagnosis is in the hands of medical men, and one which will save them much worry and anxiety. Many cases arise in which it is of the utmost importance a correct decision should be arrived at. It is claimed that in the case of gonorrhœal discharge the latter is always acid, while in the simple form of vaginal discharge it is alkaline. The reaction upon litmus-paper in this case settles the question. This would also form a very valuable means of deciding in cases of rape in which the persons committing the crime were supposed to have been suffering from gonorrhœa at the time, and to have imparted the specific disease to the victim. Further evidence may be looked for to establish or negative what, if true, will be a great step in advance in our clinical knowledge of the subject.—*Medical Press*, June 2, 1886.

THE USE OF LEMONS IN THE TREATMENT OF INTERMITTENT FEVER.

According to the Paris correspondent of the *American Practitioner and News* (June 12, 1886), DR. MASLENNIKOFF has treated twenty cases of intermittent fever with a decoction of lemons. Seven of the patients were affected by the fever for the first time, three for the second, the rest having passed previously through several malarial attacks. In thirteen of twenty cases a quotidian, and in seven a tertian variety was present. In sixteen cases the spleen was found to be enlarged and painful; in fourteen, both during the paroxysms and the intervals.

The decoction was prepared after Maglieri's method,—that is, every evening a whole fresh lemon was cut into very thin slices, put into eighteen ounces of distilled water in an earthen pot, and boiled (for two hours) until six ounces of decoction remained. On the next morning the liquid was forcibly strained through a piece of gauze, and then given to the patient to take

immediately in several gulps. The decoction was used in that way for ten or fourteen successive days. In none of the patients did any gastric disturbances occur.

The results obtained by Dr. Maslennikoff were not so successful as those by Dr. Putakhin and others. In only six cases, four of which were of quotidian fever and two of tertian, a cessation of the paroxysms ensued. For two of the remaining patients the paroxysms became less severe, and in three the type of fever underwent a change. In none did any alterations in size of the spleen take place. All cases where decoction of lemons had failed were subsequently mostly very rapidly cured by quinine. The general conclusion reached by the author is that, as far as severe Caucasian fevers are concerned, decoction of lemons has, except its agreeable taste and harmlessness, no advantages whatever over other substitutes for quinine.

THE TREATMENT OF PUERPERAL CONVULSIONS WITH PILOCARPINE.

We have two or three times in previous issues alluded to the use of pilocarpine in puerperal eclampsia. DR. JAS. MURPHY, in the *Lancet* for May 29, 1886, publishes notes of three cases of convulsion occurring in the puerperal state, in all of which pilocarpine seemed to reduce the severity and frequency of the convulsions, and all of the cases recovered, a fact which by itself is sufficient to indicate that in all probability the recovery was partly, if not largely, to be attributed to the use of this remedy. The alkaloid was given in the dose of one-third of a grain injected hypodermically, as often as every six hours or more frequently, if necessary.

URETHAN AS A HYPNOTIC FOR THE INSANE.

Urethan as a hypnotic in mental affections has been subjected to trial by Drs. OTTO and KOENIG in the Hospital for Lunatics and Epileptics in Dalldorf, who have published their results in the *Centralb. für Nervenheilkunde*. It was used in various cases of excitement, all of which are said to have been of a violent nature, in epileptics and hysterical patients, and in the stages of excitement which so frequently occur in idiotic children. In 23 cases 250 doses of this drug were given in watery solution; as much as from 30 to 60 grains or even 120 being given with

producing disagreeable results. In 10 cases of epilepsy, with depression and anxiety, its action was favorable. The authors' most favorable results were, however, obtained in the case of idiotic children, where 20 to 40 grains produced a very satisfactory result, without any disagreeable after-effects. In some of the cases, after the administration of the large doses, nausea was complained of; vomiting occasionally occurring, the patients objected to continuing the treatment with this drug, although the taste itself was not disagreeable to them.

In comparing its effects with chloral and paraldehyde, urethan did not appear to advantage, since the nausea and vomiting were more marked after urethan than after even paraldehyde, and the narcotic effects did not appear to be as marked. In cases of violent excitement, urethan, even in doses of 120 grains, produced no appreciable relief, and the authors think that its employment is best suited to cases of slight depression and anxiety, as seen in their epileptic cases. The above results were obtained in the treatment of the female wards of the hospital, and somewhat similar results were obtained in the treatment of male cases. Here also digestive disturbances, such as loss of appetite, nausea, and vomiting occurred, and here urethan was found to be of very little value in the treatment of violent cases of excitement, but it occasionally produced very satisfactory results in milder cases. The authors think that it is not as well borne or as valuable in its action as paraldehyde.

DR. ROTTENBILLER, writing in the same journal, relates his experience with urethan in the insane asylum at Budapest. Dr. Rottenbiller employed this drug, commencing with small doses,—that is, about $7\frac{1}{2}$ grains, with which he obtained in almost all cases from one to two hours' sleep. From doses of 30 to 60 grains he obtained nearly always from six to eight hours of quiet sleep, though, when the excitement was marked, this hypnotic effect was less evident.

In most cases sleep occurred from fifteen to thirty minutes after the administration of the drug, though sometimes the patients remained perfectly quiet for two or three hours, and only slept for a short time. In only two cases did he find that it produced vomiting. His experience, therefore, leads him to feel confident that in most cases the administration of from 30 to 60 grains will produce several hours' quiet sleep without disagreeable after-effects, while larger doses are to be avoided.

From the fact that several hours' sleep could only be obtained with such large doses, and that the quantity necessary to produce this effect nearly always caused disturbances of the stomach, Dr. Rottenbiller made a number of experiments with the subcutaneous employment of urethan, using a thirty per cent. watery solution, and giving doses of about 4 grains. In nine cases in which he employed it in this way he found that only two injections of 4 grains produced six to eight hours' sleep, one-fourth the quantity being thus necessary to produce the effect obtainable when administered by the mouth. The injections caused no local reaction or abscess, and the patients did not complain of pain. Should these conclusions be confirmed, economy alone should recommend this mode of employment of the drug.

SOME POINTS IN THE TREATMENT OF MORBUS COXÆ.

At a meeting of the Academy of Medicine in Ireland, held Friday, March 19, PROF. THORNLEY STOKER read a paper advocating the employment of bone-drainage by trephining the trochanter as a treatment in cases of morbus coxæ of the femoral variety (*Medical Press*, June 9, 1886). He referred to the paper on this line of treatment read by Dr. Kirkpatrick before the British Medical Association in 1867, and to the later communication of Mr. Greig Smith in 1881. Prof. Stoker dissented from the use of caustic potash as recommended by Dr. Kirkpatrick, and advocated the use of a small trephine, supplemented by a drill if necessary. He gave details of two cases in which he had operated. In one, a well-marked case of femoral hip-disease in a girl aged 11, which had advanced to the second stage, a complete and rapid recovery had taken place. The other, a more advanced case in a child aged 5 years, had been much benefited, but was still under treatment. Prof. Stoker concluded his communication by putting forward these conclusions: 1st. That tunnelling the trochanter and neck is a reasonable and good practice in cases of femoral coxalgia, and is calculated to afford drainage and remove the products of disease; 2d. That it is more in accord with surgical science, while adopting the essential principles of Dr. Kirkpatrick's plan, to avoid the employment of caustic and rely upon the more precise use of instruments; 3d. That the extended application of the plan, so as to remove the diseased bone or even to drain a joint containing pus, as proposed by Mr.

Greig Smith, is a surgical proceeding worthy of every examination.

The CHAIRMAN said that the method which Mr. Stokes and Mr. Stoker advocated seemed to be very effectual for removing diseases of the hip-joint. That it originated with Dr. Kirkpatrick, of Dublin, was creditable to Irish surgery. He used it more for caries of the bone than for disease of the joint. Mr. O'Byrne had treated such cases in the early stage with *hydrargyrum cum creta*, which was now recognized as an antiseptic. Beyond that stage the operation for drainage offered a fair chance.

MR. CROLY recalled a paper which he heard read by Dr. Kirkpatrick on the treatment of joints by caustic, and said he saw some interesting cases thus treated by him in the North Dublin Union Workhouse Hospital, while for many years since he had himself been in the habit of using *potassa caustica* for disease of the metacarpal bones and of the small bones of the foot, as the scapoid, the cuboid, and cuneiform, with very successful results. In disease recurring after excision of the elbow he saw extraordinary results from boring with *potassa caustica*. On Tuesday, 16th instant, in the City of Dublin Hospital, he bored the trochanter in a child for all the symptoms of *morbus coxæ*, cutting down on the trochanter and boring with *potassa caustica*, making a funnel-shaped opening. That morning the child said she was free from pain. His experience led him to conclude that the caustic potash had more influence in relieving pain and tension than the use either of the knife or the trephine. Although he had failed to see the pus, he had not failed to cure the patient. There was no case he disliked so much as that of a child lying a year in bed, with weight and pulley and water-cushions, receiving good diet and cod-liver oil, and yet at the end the child might get up no better; but with the boring process the result promised to be different, and surgeons would not dislike meeting a case of *morbus coxæ* at the proper stage, cutting down on the trochanter and trephining or boring, or doing both, as being a very simple procedure.

MR. KENDAL FRANKS thought the operation ought to prove most successful on theoretical grounds, but not those on which the authors of the papers (who, however, deserved gratitude for reviving an operation originating in this country) relied. Undoubtedly opening into the trochanter and neck of the bone, with free drainage, promised good results. To talk of *ascites* as simple and strumous, and of the

disease beginning in the bones and synovial membrane, was the pathology of the past. The pathology of the present established two classes of cases,—those that were tubercular and those that were not. In the large majority of hip-joint cases the disease was localized tuberculosis, the same as in the lungs and the so-called strumous glands. Ollier, of Lyons, had microscopically proved that in strumous disease of the ankle and hip-joints it was tubercular disease of the bones and the synovial membrane and of the tissues round the joint. Statistics showed that of two hundred and fifty cases tabulated by Volkmann in his own experience, and in which microscopical examination was made of bone taken out at the time of operation, there were only five or six in which he could not find the bacillus of tubercle. Therefore they had to deal with the simple inflammatory condition of the joint and with the form much more serious which had its origin in tubercle. The simple variety was amenable to cure by counter-irritation and free drainage of the bone. In some cases of tubercular disease, also, Dr. Kirkpatrick's method promised good results. And why? Suppose the foci of the tubercle to be in the great trochanter or in the neck, what better treatment could there be than boring down upon it and scraping it out, and applying caustic potash or any powerful escharotic to destroy the foci and render recovery probable? Of course if the condition of the synovial membrane was simply one of inflammation, and the tubercular disease had not spread, they might expect the inflammatory condition inside the joint would subside when the irritation of the tubercular foci had been removed from inside the bone. But what good could ensue when the bacilli were found swarming over the synovial membrane was not so certain. If they could be certain that the case was a simple one, the simple modes of treatment were the best; but when the case was strumous,—*i.e.*, tubercular,—the only rational method was to remove the foci, and that could be done, if the disease began in the bone, by the boring and scraping process and the application of caustics. If the disease was in the synovial membrane he would scrape out the parts and apply, if necessary, a cautery; but in leaving germs behind there was danger, not so much of the return of the disease in the parts themselves as of the germs being carried along in the lymphatics and causing general tuberculosis.

DR. FOY called attention to a modification of Sir Philip Crampton's treatment as practised

by Dr. Hardy, of Manchester, by slitting the capsule and cutting down on the periosteum.

DR. TATE mentioned that thirteen years ago a girl, aged 18, was operated on by Dr. Kirkpatrick at the North Dublin Union Workhouse Infirmary. The tubercular affection left her afterwards, and she was now in good health. She had had a child since the operation, and would soon have a second.

MR. STOKES replied. First, Mr. Stoker's objection to the use of caustic as part of the treatment had been answered by Mr. Croly, who pointed out its twofold advantage,—(1) in leaving a large funnel-shaped opening which facilitated drainage, and (2) in keeping the part open much better than if a simple incision were made. Thus, too, the danger was obviated of the wound being filled too rapidly by granulation, or of the external opening closing and leaving a cavity in which the fluids accumulated and suppuration ensued. The excellent results from that mode of treatment formed an argument against the very recent pathological views of Ollier and Volkmann, which they had been taken to task for not having adverted to, as to those cases being constantly so strumous in their character. He had heard Ollier's paper at the Congress in Copenhagen, and the impression produced was that Ollier was looking at all diseases of bones through tuberculous glasses, for every disease appeared in his point of view to be essentially tuberculous. With that view he could not agree, notwithstanding the high authority in support of it. The rapidity of cure from simple modes of treatment, and the absence of evidence of tuberculous disease in other parts of the body, pointed to the fact that those cases were by no means so frequently tuberculous as they were generally supposed to be. From his own experience certainly he did not think the majority of them were. As to the operation of opening into the large joints and scraping out the diseased parts, he had not done it in the hip-joint, but he had in others with very disappointing results, especially from that procedure in the knee-joint. It was physically impossible to scoop out all traces where there was extensive tuberculous disease. The mode of treatment which he advocated was not to be adopted indiscriminately, but only in selected cases, and in the early stages of the disease. Whatever had been said to the contrary, there was no one more alive than he was to the importance of the most perfect rest that could be obtained by mechanical and other means in the treatment of joint-disease.

MR. W. THORNLEY STOKER also replied. With regard to the caustic or no caustic question, he had expressed and felt no very strong opinion. He believed in bone-drainage, and, as stated in his paper, he was open to conviction on the subject of caustic one way or the other. Like Mr. Stokes, he regarded rest as a most important adjunct of the treatment which he advocated. Although Mr. Franks spoke from an Olympian height of modern pathology, he was not carried away either by the positiveness of Mr. Franks' statement or the cogency of his argument; and despite his having decried the division into osteal and synovial cases, he still thought that was the most important clinical division of morbus coxæ that could be made. Upon that he based the value of the treatment which he advocated. He had not overlooked the distinction between tubercular and simple disease. He had mentioned it, but in addressing a learned society it was unnecessary that that subject should enter into the text of his paper as if he were addressing a number of first-year students. He did not believe all cases of morbus coxæ were tubercular, while he was sure a great number of them were.

TWO TRACHEOTOMIES ON THE SAME DAY IN ONE FAMILY—WATER POURED INTO TRACHEAL WOUND TO ASSIST EXPECTORATION.

At a meeting of the Practitioners' Society of New York, held April 2, 1886, DR. GEORGE F. SHRADY referred to two cases of tracheotomy which he had recently performed on the same day upon two sisters, aged respectively 2 and 4 years (*Medical Record*, June 19, 1886). He was called to them the day previous to the operations. They were both affected with diphtheria. In the younger the disease was in the fauces and extended downward, and in the older it was confined to the larynx and trachea. Both rapidly developed symptoms of suffocation.

The temperature in the younger child was 102° F., and in the older 101° F. The operations were performed without mishap, first upon the younger sister, and in a few hours after upon the older one. The younger, although temporarily relieved of the difficulty of breathing, died of secondary croup twelve hours afterwards. The older child recovered, discharging through the tube on the fifth day a bifurcated fibrinous cast. In neither of the cases was any chlorate of potassium or iron administered, the treatment consisting in the

freest possible stimulation by milk-punch. The latter, he remarked, was his mainstay in desperate cases. This opinion was shared by Dr. Ripley, who saw these cases in consultation, and assisted at the operations.

There was one item in the after-treatment to which he wished to call attention.

There was, as is usual, a great deal of expectoration through the tube, which was assisted by the inhalation of steam. But the most prompt benefit was derived from pouring lime-water by the teaspoonful directly into the trachea through the wound. This was done at the suggestion of Dr. Ripley, who had frequently used it in his practice with occasional good result.

Dr. Shrady had never seen this method tried before, and was struck by its good effects in dislodging tough mucus and shreds of membrane.

DR. BALL said he was unable to see how the lime-water could be of any special service, as it was expectorated so quickly, and thought that plain water would be equally as good.

DR. SHRADY said that, so far as the mechanical effect was concerned, water would answer the same purpose. The possible advantage of the lime-water was, that in case any was retained, it might have the effect of loosening the phlegm, or of possibly helping the separation of membrane.

THE TREATMENT OF NEURALGIA BY PARTHENINE.

DR. ESPERON publishes the notes of two cases of neuralgia treated by parthenine, an alkaloid recently extracted from a plant which is known in Cuba as *giesta amara* (*Les Nouveaux Remèdes*, April 1, 1886). The first was that of a woman, aged 33 years, who, as a consequence of an abortion, suffered from very severe pains in the iliac fossa during the menstrual period. Morphine, chloral, bromide of potassium, were all inefficacious, but quinine somewhat relieved the suffering. In a subsequent attack, characterized by pain, chills and fever, the author diagnosticated ovarian neuralgia. He made a subcutaneous injection of morphine, and gave 1 grain of parthenine every two hours. The effect of the morphine was evident an hour after its administration, but the pain, nevertheless, continued. As a consequence of three doses of parthenine, the pain disappeared, and did not return. The same effect was obtained in another case. The author claims that this

substance is especially indicated in neuralgia of malarial origin.

A NEW METHOD FOR THE REMOVAL OF INTRAMURAL UTERINE TUMORS.

DR. O. STROINSKI, of Chicago, writes to the *New York Medical Record* (June 19, 1886) as follows: "After severe losses in removing intramural uterine tumors through the abdominal or vaginal walls, I decided either to abandon entirely any attempts of extirpation of these tumors, or to find a method that would give a reasonable show of favorable results. Lately I have found that continued intra-uterine injections with diluted subsulphate or sesquichloride of iron produce a discharge of mucous membrane, as well as of muscular stratum, and that, combined with the effect of contractions always evoked by these injections, causes the intramural tumors to be forced into the uterine cavity, where they may easily be seized and extracted. I will give the minute details of these proceedings at another time, and will now merely formulate the conclusions which I have arrived at after a careful study and a good deal of experience: 1. Extirpation of intramural uterine tumors through the abdominal or vaginal walls is as unnecessary as it is dangerous; while, 2. There are certain procedures which always transform the intramural into an intra-uterine tumor, which can be easily extirpated; 3. These procedures only should be made use of in the removal of intramural tumors, being entirely harmless, and never endangering the life of the patient nor maiming the sexual organs; 4. Even the largest myoma might be easily removed by this operation; 5. Only tumors situated on the surface of the uterus are excluded from this procedure. I have operated on cases in which large doses of ergot had been taken for a long time without the slightest effect, and in one case in which the tumor had existed before marriage, and a child had been born without the tumor losing its size or changing its position. I will furthermore say, that I have operated in private as well as hospital practice, so that there cannot be any doubt of the reality of the facts."

URETHAN IN THE TREATMENT OF TRAUMATIC TETANUS.

MR. W. T. JACKMAN reports in the *Lancet* for June 12, 1886, a case of a boy, aged 15 years, who came under his care with well-

marked symptoms of tetanus, as the result of a crushing of a finger by cog-wheels five weeks previously. The lockjaw was complete, and the opisthotonos well marked; severe paroxysms of pain were complained of, which were greatly exaggerated at night. The patient had noticed his neck and jaw muscles gradually becoming stiff for the past few days, but attributed this to a chill. Choral hydrate in 20-grain doses every three hours was ordered. This relieved the paroxysms of pain slightly during the day, but the lockjaw, opisthotonos, and rigidity of the muscles of the legs remained the same, and the pains were just as severe and frequent during the night. Fluid nourishment was administered and the chloral treatment continued until March 25, when, as no abatement of the symptoms was apparent, after consultation, it was decided to discontinue the chloral during the night, and in its place give the patient 4 grains of urethan every two hours, from 6 P.M. to 6 A.M. The first night of this treatment showed a marked decrease in the severity of the symptoms, and the patient made gradual and uninterrupted progress until April 20, when his recovery was established. The failure of the chloral hydrate to relieve the severe symptoms during the nights, and the well-marked improvement under the influence of the urethan, seem to point to the latter being likely to prove a very valuable drug in the treatment of tetanus, either prescribed alone or as above in conjunction with chloral hydrate.

THE ACTION OF FATTY BODIES ON CARBOLIC ACID.

Fatty bodies have a remarkable effect when mixed with carbolic acid, an effect well known to surgeons who employ carbolized oil containing 1 part in 10 of the acid without pain or irritation, whereas 1 part of the acid to 40 of water produces a distinctly irritating effect. This property appears to belong to all the fatty bodies as well as to glycerin, and carbolized soap, containing 1 in 10 of the acid, is also well borne. PERIER has pointed out that only the crystallized acid being so affected, the use of any other form of acid is attended by the usual irritation. Experiments were made with the view of ascertaining whether vaseline had a similar effect, but this was found not to be the case, and if a vaginal examination be made, the finger being anointed with vaseline containing 1 in 20 of the acid, the patient will complain of a burn-

ing pain. The question naturally arises as to whether the antiseptic properties of the acid are lessened by the addition of oils at the same time as its irritating qualities. The result of clinical experience seems to prove that this is not the case, and the benefit of a stronger solution in oil may be obtained without the inconvenience of any caustic action.—*Medical Press*, June 9, 1886.

CHRONIC CATARRHAL GASTRITIS.

At the recent meeting of the Association of American Physicians, held in Washington, DR. FRANCIS DELAFIELD, of New York, read an elaborate paper on "Catarrhal Gastritis" (*Boston Med. and Surg. Journ.*, June 24, 1886).

In the consideration of the treatment of the disease he brought out many new points.

In attempting to establish a satisfactory treatment for chronic gastritis, he shows that it is important to state as clearly as possible the problem which is to be solved.

First, then, we must remember that all the patients who suffer from gastric symptoms do not necessarily have chronic gastritis.

Besides those who have functional disturbance of the stomach, or cancer or ulcer of the stomach, we find many others in whom gastric symptoms are due to diseases of other parts of the body. Anæmia, uterine disease, the neurotic and hysterical condition, and constipation, often behave in this way. In old people, the function of gastric digestion is often impaired simply as the result of old age. To each one of these conditions belongs its appropriate treatment, but it is not the treatment of chronic gastritis.

Still further, we must remember that in many cases of gastritis, palliation of the symptoms is all that we can hope for. This is true with the gastritis associated with heart-disease, emphysema, phthisis, cirrhosis, Bright's disease, gout, rheumatism, and alcoholism. It is also true of the cases in which the inflammation has gone on to the destruction of the septic and mucus glands. After excluding all these, there remains a large and important group of cases of chronic catarrhal gastritis, in which we may hope not only to alleviate the symptoms, but to cure the disease.

It is evident, from the nature of the disease, that any treatment intended not merely to palliate, but to cure, must be of long duration, and that it must be repeated from time to time, when the inevitable relapses occur.

The different plans of treatment, then, which may be adopted are—

The curative effects of climate and mode of life.

The regulation of the diet.

The administration of drugs.

The use of local applications directly to the inflamed membrane.

I. CLIMATE AND MODE OF LIFE.

The two points of importance are,—first, the locality selected must be one where the patient can lead an out-of-door life; second, the patient must live in this climate either for several years, or for a considerable part of each year.

Excellent as this method of treatment is, it is evident that it can be carried out only by a limited number of persons.

II. THE DIET.

The regulation of the diet is a matter which demands consideration in every case of chronic gastritis. In trying to ascertain the best way of feeding these patients, he has found only one satisfactory method, and that is to feed them experimentally with different articles of food, and then, after an interval of several hours, wash out the stomach, and see how thoroughly these articles of food have been digested and removed from the stomach. After pursuing this course for a number of years, Dr. Delafield has arrived at the following conclusions:

It is necessary that the patient should be well fed; a starvation diet never answers.

The stomach does not require any rest from the performance of stomach digestion; on the contrary, it is all the better for being called on to perform its natural functions.

The patients' own ideas as to what food agrees with them are usually erroneous. They are apt either to starve themselves or to select the least nutritious articles of food.

The use of artificially-digested foods, or of substances such as pepsine to assist stomach digestion, is unnecessary.

The starches, oatmeal, cornmeal, bread, the cereals, the health foods are, as a rule, bad. Portions of them remain undigested in the stomach for many hours.

Milk in adults is an uncertain article. It answers very well for some persons, not at all for others.

Meat is usually readily and well digested, but there are occasional exceptions to this rule.

Vegetables and fruits can be eaten, but the

particular varieties must be selected experimentally for each patient.

He does not believe that any case of chronic gastritis is to be cured by diet alone. Even the exclusive milk diet, while it often relieves symptoms, is, as a rule, only temporary in its effect, so that the patient simply loses a certain amount of time by employing this instead of more efficacious plans of treatment.

III. THE ADMINISTRATION OF DRUGS.

The advantageous use of drugs belongs to the earlier stages of chronic gastritis. At that time they often palliate symptoms, and sometimes even seem to cure the inflammation. In the later stages of the disease their use becomes more and more unavailing. The reliable drugs for this purpose are not numerous,—the preparations of soda, potassium, and bismuth, the mineral acids, glycerin, sometimes carbolic acid, sometimes iodoform, sometimes the bitter infusions. If none of these answer, it is hardly worth while to look any further. If we can combine, with the administration of drugs, the regulation of the diet and of the mode of life of the patient, then, of course, our chances of success are much greater.

IV. THE USE OF LOCAL APPLICATIONS MADE DIRECTLY TO THE MUCOUS MEMBRANE OF THE STOMACH.

This the author regards as the most efficacious plan of treatment for those patients who are not able to leave home and seek a proper climate, but ask to be relieved without interruption to their ordinary pursuits. The local applications are readily made by the introduction of a soft rubber tube through the œsophagus into the stomach.

Liquid applications are the best. They should be made in such quantities as to come thoroughly into contact with the entire surface of the mucous membrane, although the pyloric end of the stomach is the region where the inflammation is principally situated. They should be made at a time long enough after eating for the stomach to be as nearly empty as possible.

For many cases warm water alone in considerable quantities is the only local application needed. In some, however, there is an advantage in medicating the water, and for this purpose he employs a variety of substances.

The alkalies, the mineral acids, bismuth, carbolic acid, the salicylates, iodoform, bella-

donna, ipecac, gelseminum, may each one be employed according to the particular case.

For the first week it is often necessary to put the patient on a milk diet, and this can be done even with those patients who, under ordinary circumstances, cannot take milk at all.

Then, after a time, to the milk we add one solid meal composed of meat alone. Next, this single meal is increased by the gradual addition of fruits, vegetables, and bread. Then comes the giving of two solid meals a day instead of one, then three solid meals, and now we get rid of the milk in part or altogether.

For the first week of this treatment it is wise not to expect any special improvement. Indeed, even a longer time than this may try the perseverance of the physician and the confidence of the patient.

Sooner or later, however, the expected improvement begins,—the nausea and vomiting cease, the constipation or diarrhoea is improved, the flatulence is no longer troublesome, the headache becomes less frequent, and, of more real value than these, the improvement in the general condition of the patient becomes evident. The color, the weight, the appetite, the sleep, the spirits of the patient, all show a change for the better. Of all the symptoms, the pain is the one which is apt to persist the longest.

For two or three months the patient has to be kept under observation, and the applications to the stomach made by the physician. After this the patient is dismissed, but continues the treatment himself, first every other day, then twice a week, then once a week for several months. The regular relapses of the disease are managed in the same way, but are much more quickly relieved.

THE DIURETIC ACTION OF CLODBERRIES AND WATERMELON.

In the course of a prolonged study of diuretics, PROF. S. A. POPOFF, of St. Petersburg (*Vratch*, No. 4, 1886, p. 34), examined the action of three remedies used as diuretics in Russian popular medicine; they were cloudbberries (*Bacca Rubi Chamæmori*; Russian *moroshka*), watermelon (*Cucumis citrullus*; Russian *arbcos*), and dew-worms (*dojdevyž tchervi*).

1. *Cloudbberries* are used chiefly by peasants in Northern Russia, in the shape of an infusion of the berries in water or vodka (*aqua vitæ*). Scientific medicine contains but scanty

fragmentary notes on the drug; thus, Dr. Trinkovsky (*Meditz. Zeitung Russlands*, No. 44, 1856) stated that he successfully employed the infusion as a diuretic in a case of hydrocephalus in a child. Dr. Popoff first prepared a decoction and extract of the fresh berries, and then—after a series of experiments on man and animals had convinced him of the really powerful diuretic action of the drug—proceeded to isolate its active principle, after the method given by Prof. A. A. Loesch for the extraction of blattic acid from cockroaches. He obtained in that way an acid in the shape of an almost colorless powder, easily soluble in spirit of wine, but very sparingly soluble in water. It gave crystallized and easily soluble salts with alkalies. Experiments on cold- and warm-blooded animals showed that the acid, like antihydropin (blattic acid), belonged to the class of "essential diuretics" (that is, drugs which act solely on the renal tissue); for, on its subcutaneous or intravenous introduction even in very large quantities, it did not give rise to any considerable changes either in the cardiac action or in the arterial tension. The diuretic action of the acid was manifest under all methods of introduction into the system, but the strongest effects were observed on intravenous injections (of 2 centigrammes of the sodic salt for each kilogramme of the animal's weight). Division of the spinal cord, of the splanchnic nerves, curarization, etc., increased the diuretic action of the drug. Stimulation of the splanchnic nerve did not diminish the secretion of urine. But, while fully recognizing that cloudbberries are a good and safe diuretic, the author yet comes to the conclusion that, as such, they are considerably weaker than antihydropin and cannot replace the latter.

2. *Watermelon*.—This, by the way, was recommended by Prof. V. A. Manassein, in the *Vratch*, November, 1881, p. 351, as an extremely cheap, but effective substitute for grapes in the treatment of chronic congestion of the liver, chronic intestinal catarrh, etc. It is extensively used by the peasantry in Southern Russia (especially near the river Don, and in the Caucasian districts) in the form of the freshly expressed juice, as a diuretic draught in cases of dropsy, uro-genital affections (especially gonorrhœa), etc. The author experimented with the inspissated fresh juice or syrup of the fruit, and with commercial melon-honey (*arboosnyi miod*). The diuretic action proved most striking: when animals received from 50 to 100 grammes of the syrup (with food) in twenty-four hours, the daily quantity

of urine was three or four times greater than under ordinary conditions; again, on intravenous injection of the syrup, "the urine for several minutes flowed in a stream from a canula tied into the ureter." On the subcutaneous injection of 0.4 to 0.7 gramme into frogs, the syrup rapidly slows the cardiac action up to complete arrest in diastole, and produces prostration with loss of voluntary movements, while reflex action and the excitability of the motor nerves and muscles remain intact. When very large doses are used, in the latest stages there is observed, also, a failure of reflexes and of nervo-muscular excitability; but the phenomenon is then undoubtedly nothing but an ordinary symptom of præmortal agony. In dogs, the internal administration of 500 grammes at a time produces no effect, except powerful diuresis. Intravenous injection of 1 to 2 grammes of the syrup causes an immediate increase in the secretion of urine, the latter assuming a dark color, and containing sugar. This increase lasts for ten to sixty minutes, and is accompanied only by a slight fleeting decrease of the blood-pressure. On the injection of 0.25 to 0.5 gramme for each kilogramme, a considerable fall of the pressure and a great acceleration of the pulse rapidly follow. An intravenous injection of 3.0 grammes per kilogramme produces a further fall of the pressure and a fleeting increase, with a subsequent sudden enormous decrease in the frequency of the pulse, the animal dying from cardiac paralysis. As some special experiments show, the quickening of the cardiac action is dependent upon the syrup acting on the peripheral ends of the vagi. In all cases, intravenous introduction of the syrup rapidly produced a strong sedative effect, "the animal remaining strikingly quiet, and giving no response to tactile or even pathic irritation." Another group of experiments showed that the diuretic action of melon-syrup was dependent mainly upon its direct influence on the renal tissue.

3. *Dried dew-worms* are used by Russian peasants (especially in the Smolensk Government) in the shape of a powder or an infusion. They, also, possess a decided diuretic action, as will be shown in a forthcoming work of Dr. Shimansky, who is now studying, under the guidance of Prof. Popoff, the physiological properties of this palatable drug.—*London Medical Record*, June 15, 1886.

A NEW AND ORIGINAL METHOD OF SURGICAL DRESSING.

DR. CHARLES W. STROBELL, of Middletown Springs, Vermont, writes to the *Medical Record*, June 26, 1886, that he was led by the paper of Dr. Hamilton and the criticisms upon it in recent numbers of the *Record* to consider what improvements might be made upon the modes of antiseptic dressing now in use. The main objection to the ordinary dressings of cotton-wool, gauze, etc., is that it conceals the wound from view, so that inflammation, secondary hemorrhage, and other accidents cannot be detected at their onset, and may become only too well established before the surgeon becomes aware of their existence. In order to obviate this, Dr. Strobell proposes to cover the wound with a thin glass globe, so constructed as to fit closely to the part, provided with two openings for drainage-tubes and a large opening on the top to permit of access to the wound in case of need, without removing the globe. These openings are provided with glass stoppers, so that they can be hermetically closed. The base of the globe is provided with a flange, and its sides, up to within two inches of the drainage-tube openings, are roughened so as to facilitate the adhesion of the isinglass plaster used in sealing it. When applied to stumps after amputation, a thin rubber band, three inches wide, is applied over the flange, so that it rests with one-half its width on the integument of the limb to secure additional safety. The flange is covered on its external surface with isinglass plaster adhesive on both sides, so that the band of rubber shall adhere firmly to the globe. In the case of an amputation at the knee-joint, after the sutures and drainage-tubes are in place, the wound is capped with a disinfected globe of the proper size to fit snugly over the limb, the drainage-tubes in the globe being on a line with the anterior surface of the wound. The rubber band is now turned down over the limb, and strips of adhesive silk, one inch in width, and twelve inches in length, are applied longitudinally from the upper part of the ground portion of the globe up the limb, each strip overlapping slightly the preceding one, a final strip being placed circumferentially around the flange and covering in the ends of the longitudinal ones. In a case of laparotomy an oval-shaped globe may be applied in a similar manner.

The following are the conclusions of the writer: "The method commends itself to the profession,—1. In the complete isolation of wounds that can be obtained in the event of

infection of hospital wards by erysipelas, etc., as the globe can be hermetically sealed. 2. All changes can be noted clearly at any moment with the minimum amount of discomfort to the patient, thereby increasing largely his chances of recovery. 3. The perfection of drainage, which has never been obtained in so great a degree, obviating the necessity of soaking off bandages saturated with dried pus, blood, and serum, often adhering so firmly to the wound that the most gentle manipulation is required to avoid laceration of the tender granulations. 4. Secondary hemorrhage can be detected at the earliest possible moment. 5. The first evidence of inflammation can be noted, and its movement forestalled by removal of the cause. 6. The action of topical remedies can be observed without exposure of the wound to the air. 7. The dressing can be adapted to wounds of almost every description. 8. Refrigerant and thermal water-dressings can be applied with the utmost facility. 9. Lotions or powders can be easily applied to the wound through the main opening in the globe without disturbing the dressings. 10. If it is desired to prevent the ingress of infected air, the drainage-tubes can be filled with plugs of iodoformed or carbolized cotton. 11. In the event of inflammatory swelling rendering the constriction of the base of the globe excessive, the apparatus can be replaced by one of larger size, with less expenditure of labor and time than is required in the application of a Lister dressing. 12. Facility is afforded for determining the therapeutic effect and germicidal action of direct sunlight in the treatment of wounds. 13. By means of long, slender forceps and scissors the sutures, drainage-tubes, and adhesive plaster may be easily removed through the main aperture in the globe. 14. The weight of the apparatus is not as great as that of the ordinary Lister dressing. 15. If perfectly applied there should be no more constriction of the limb than results from moderately firm bandaging. 16. The expense is comparatively light, as the globes can be used indefinitely, being thoroughly disinfected by boiling water. 17. The apparatus may be adapted to any external surface by taking, in special cases, wax impressions and transmitting them to the manufacturer. In conclusion, I will say that my claim to originality is, in my opinion, well founded, as nowhere in surgical works have I seen glass mentioned, used in the way I have indicated, as a protective dressing."

Reviews.

THE INTERNATIONAL ENCYCLOPÆDIA OF SURGERY.
 Edited by John Ashhurst, Jr., M.D. Vol. VI.
 New York: William Wood & Co., 1886.

This, the sixth and last volume of the Encyclopædia, completes the labor of its editor, Dr. Ashhurst, who has, he writes, been engaged in the task for more than six years. We congratulate him upon the termination of his work, and feel confident that he has built for himself a monument which will ever remain as an evidence of his industry, perseverance, and learning. The present volume contains contributions from writers who represent several nationalities, and is, therefore, a true international volume.

The article on "Injuries and Diseases of the Esophagus" is by Dr. J. Solis-Cohen; it also includes a section on "Gastrostomy and Enterostomy." The writer has given a full, clear, and practical monograph upon these subjects. Many of the lesions of this portion of the digestive tract are found to be beyond the power of the surgeon to cure, yet various methods of relieving pain and prolonging life have been devised. Dr. Cohen has made a most thorough investigation of the literature of these affections, and has given us all worth knowing of their diagnosis and treatment.

Dr. John Ashhurst, Jr., contributes the article on "Intestinal Obstruction." This affection was formerly almost exclusively confined to the domain of the practice of medicine, but from the advances which have been made in modern surgery, it has now become one of great importance to the surgeon, and operative interference has a just, indeed an imperative, claim in this lesion. The different forms of intestinal obstruction, their symptoms and diagnoses, are given in a most concise and able manner by Dr. Ashhurst; in fact, we cannot conceive any one failing to readily comprehend the descriptions given by him. The surgical features of the lesions are more especially dwelt upon by the writer, and there remains but little for the reviewer to notice except to praise. The antiseptic method of operating in laparotomy is not advised, although the author can see no harm in the surgeon adopting Listerism, without the spray, "if he thinks that by so doing he renders the operation safer to his patient." Keith and Tait, of England, are quoted as opposed to the Lister method. Again, it is stated that the mortality of the operation has increased since the prevalence of antiseptic surgery. It is

upon this most important part of the technique in laparotomy that we must differ with Dr. Ashhurst. The surgeon who would undertake to perform the operation of opening the abdominal cavity without employing antiseptic precautions,—not Listerism as understood by many, but Listerism as meaning aseptic measures,—we believe does so thinking he is doing the best for his patient; but, in our judgment, and in that of those who have had a large experience in this class of operations, the neglecting to use all measures that have been found by the majority advantageous to success, is not doing the best for the patient. Both Keith and Tait we consider to be the best exponents of aseptic surgery; indeed, the minuteness of technique practised by these operators, in order to carry out as near as possible an ideal aseptic condition, can scarcely be excelled. An increase in the mortality of about two per cent. is observed in the statistics given by Dr. Ashhurst, taken from his former table published in 1874, and his present one, from which he concludes that antiseptic surgery has not diminished the fatal termination in this operation. That there has been an increase in the number of deaths during this period of ten years is not at all to be wondered at; in fact, when it is recognized that the frequency of the operation has increased fivefold during this period, we can only congratulate ourselves upon the advance in surgery which has encouraged surgeons to attempt an operation that formerly had been so seldom undertaken. To censure antiseptic surgery for the increased mortality we believe to be unjust, and we cannot but think that Dr. Ashhurst upon this point is in accord with us.

"Injuries and Diseases of the Rectum," by William Allingham, F.R.C.S. This surgeon, so well known as a writer upon these affections, has written a somewhat brief, but decidedly instructive, and in no way speculative article. It is evident that personal experience and great familiarity with these lesions have given the author the necessary training to write as he does, and his advice in the treatment of these diseases can generally be followed without hesitation. The section on the anatomy and physiology of the rectum is especially worthy of notice, and its study will greatly assist in more readily understanding the different pathological changes, and to more correctly apply means for their relief. We find it stated that cases of stricture of the rectum and ulceration not cancerous are considered to be due to tertiary syphilis, and are

not the result of contamination by the discharges from chancroids. In this we believe the writer to be in the right, and although most surgeons are opposed to his view, we think a careful investigation of these cases will demonstrate their error. The section on hemorrhoids includes all the surgeon may require to diagnose and to treat these very frequent lesions. Preference is given to the crushing operation, but in certain cases the ligature is to be used. The injection of carbolic acid, caustics, or astringents, the removal with the *écraseur*, the application of acids, the galvanic cautery, the clamp, and actual cautery are all said to "have little to recommend them; when they are not uncertain methods they are dangerous, and occasionally they combine both danger and uncertainty of result." To all of which we agree, making, however, an exception in favor of the clamp and actual cautery. This method we have followed for several years, and the results have been very successful.

Dr. E. L. Keyes has written the article on "Urinary Calculus," and we are most favorably impressed with the way in which he has presented the subject. The causes, geographical distribution, classification, structure, both chemical and gross, and different locations where urinary calculi may be met with are all given in a masterly manner. Turning to the section that discusses stone in the bladder, the most important and most frequent of urinary calculi, we find that the writer does not disappoint our expectations. While other surgeons have been duly accredited with their labors in this field, and their work fully appreciated, Dr. Keyes has also written freely of his own personal experience and observations. It almost seems as if the diagnosis and treatment of this affection were about as near perfection as surgeons may reasonably hope for. Indeed, Dr. Keyes writes, "My general impression is that the operation is reasonably (but not entirely) safe, even where the kidneys are unsound, and that with perfectly healthy kidneys litholapaxy, properly performed, is nearly as harmless an operation as passing a catheter." A method of diagnosis by means of the Bigelow apparatus for washing in litholapaxy, in which the striking of the most minute particle against the tube may be felt by the surgeon, has proved in the hands of Dr. Keyes successful when all other means had failed. The suprapubic operation is fully described, including the more recent method advocated by Petersen, in which the distended bladder is lifted

out of the pelvis by forced dilatation of the rectum, thereby removing greatly the danger of injury to the peritoneum. This is the operation which has lately been so favorably presented by Sir Henry Thompson; indeed, he is inclined to believe that the future operations for stone will be limited to this suprapubic one and that of litholapaxy. The conclusion of Keyes is, however, not so favorable. He writes, "My conclusion from the evidence, therefore, is that the high operation (suprapubic) is suitable for the management of very large stones, for encysted stones, for stones complicated by tumors of the bladder, and for certain foreign bodies, but that it is not appropriate for general application." The section on litholapaxy is quite exhaustive and excellent. The directions for manipulating the instruments in performing this operation are given so very clearly that one cannot fail to fully understand them, and it is very evident that the writer is speaking from actual experience. The selection of a method of radical treatment in cases of stone is at times a perplexing question for the surgeon to decide. Dr. Keyes, from his experience, has reached the following conclusions as to the cases in which lithotomy is to be preferred:

"1. All male children before puberty.

"2. All cases complicated by very severe chronic cystitis.

"3. Cases of tumor of the bladder complicating stone.

"4. Some cases of prostatic overgrowth not complicated with atony.

"5. Some cases of very large prostate through which instruments cannot readily be made to pass.

"6. Cases complicated by severe deep urethral stricture.

"7. Cases of very large or very hard stone.

"8. Cases of encysted stone.

"9. Cases of certain foreign bodies.

"All other patients who are proper subjects for radical operation may be best dealt with by lithotrity; very small stones possibly by the old-fashioned operation without ether, perhaps with cocaine, but all other calculi by litholapaxy."

Professor Hingston's contribution on "Lithotrity" is a most admirable paper, full of sound advice and practical observations. The writer is an ardent advocate of this operation, and believes it to be the one which will eventually supersede all others, since for him age, condition of the bladder and kidneys, or urethra are equally suitable either for lithotrity or lithotomy. He, however, cautions

against reckless operating, more especially in the use of the evacuating instrument. "Rapid lithotrity, conducted with care and prudence, and with due regard to the patient's general and local condition, is a most satisfactory procedure; but rapid lithotrity, when it means the invariable completion of the operation at a single sitting, may mean suffering, disaster, and death."

"Injuries and Diseases of the Bladder and Prostate," by Reginald Harrison, F.R.C.S. This article, coming from the pen of so celebrated a writer upon genito-urinary surgery, should entirely satisfy the expectations of all, and, indeed, it is a valuable contribution. The section on hypertrophy of the prostate may be read with benefit by all surgeons, and although the author can suggest no preventive treatment, yet we think him in the right when he advocates early dilatation of the prostatic portion of the urethra. It is to us certainly rational to believe that so soon as any obstruction to the passage of the urine is manifest, an attempt to keep the canal open by means of bougies is the proper course to adopt, and the experience of Mr. Harrison would seem to justify such a conclusion.

The operation of "Prostatotomy" is recommended by Mr. Harrison in cases of hypertrophy of the prostate where there is unusual difficulty in passing the catheter. "It consists in opening the membranous urethra from the perineum, making a section of the obstructing portion of the gland in the median line." A drainage-tube of special form, devised by Mr. Harrison, is introduced through the opening into the bladder, and retained in position from six to twelve weeks. The results obtained by this method of treatment have been such as to encourage the adoption of the operation by Mr. Harrison in several cases. In an affection where the suffering is so great that life is scarcely worth living,—and truly such is the case in some of the long-standing cases of hypertrophy of the prostate,—any means which offers the faintest hope of relief from such misery is justifiable, and it becomes the duty of the surgeon to perform any operation that may possibly allay suffering. Under tumors of the bladder we find no reference to the digital exploration of this organ through incision of the urethra from the perineum,—a method which has been so successfully employed by Sir Henry Thompson; and as there is usually great difficulty in forming a correct diagnosis in these cases, any procedure that is at all likely to aid us ought not to be neglected.

Professor Simon Duplay has written a very exhaustive and most excellent treatise on "Injuries and Diseases of the Urethra." The article discusses exploration, traumatism, foreign bodies, organic lesions and malformations of the urethra, and urinary fever. The section on stricture of the urethra is entirely a French view of this lesion: English or American surgeons who have contributed any information—and they certainly have done much in this field—are neither quoted nor referred to. M. Duplay, we believe, is in the right when he writes, "Finally, it cannot be too often repeated that the cure of stricture of the urethra is never radical and final, no matter what method of treatment may be employed; and that relapses will inevitably occur if care be not taken to maintain the results obtained by means of treatment continued, so to speak, indefinitely." This opinion, however, is contrary to the opinion held by Otis, who claims that the cure is permanent when the operation as proposed by him is adopted. The methods of treatment in this lesion, proposed by M. Duplay, are either cauterization, dilatation, or urethrotomy. Cauterization is a procedure not advised by English or American surgeons of to-day; yet, in the opinion of M. Duplay, in certain cases it answers a good purpose. It is only to be resorted to, according to him, as an auxiliary to dilatation, never should be deep and destructive, and preference should be given to cauterization practised from before backwards. Dilatation is the method most approved of by M. Duplay. The Voillemier division into inflammatory and mechanical dilatation is adopted by him. The former is understood by English and American writers to be continual dilatation, and the latter known as gradual and rapid dilatation. Inflammatory dilatation, and the pathological phenomena which this treatment occasions, are fully described, and it is thought to this method "the first rank should without contradiction be accorded." Mechanical dilatation is divided into gradual, rapid, forced, sudden, and forced injection. Of these methods, M. Duplay gives the preference to gradual dilatation when applicable, and sudden dilatation or divulsion is, from his own experience, thought to have the advantage of giving better results than internal urethrotomy. This opinion is not accepted either by English or American surgeons, who almost without exception concede the advantage to internal urethrotomy over divulsion; indeed, the latter operation is seldom advised by them, and a few consider it to be a dangerous method. The section on

"Spasm of the Urethra" is worthy of special notice, especially as this symptom is rarely so fully discussed in English or American works which treat of these diseases. Malformations of the urethra is the one section of all others included in M. Duplay's article which should be carefully studied by surgeons who may have occasion to perform any operation to remedy these defects. The methods proposed and practised by him seem to be most admirably adapted to cure these lesions, and his results appear to have been very satisfactory. Of the various theories advanced to account for the development of urethral or urinary fever, M. Duplay believes that that of "phlebitis and nervous exhaustion belong to history, and are absolutely untenable; there remain the theory of direct absorption and the renal theory; equally rational, equally in accord with recent advances relative to the pathological physiology of fever, they both make urinary fever the result of a systemic intoxication with the constituents of the urine; the first admits the resorption of these constituents by a point of lesion in the urinary passages, the second maintains their non-elimination by a chronically altered kidney, or by one the function of which is temporarily disturbed by a passing congestion of reflex origin." In deciding between these two theories, we are inclined to think with M. Duplay that both are concerned in producing two very different forms of urinary fever, one an acute or rapid, the other chronic or slow. To the former the reflex theory seems to us most applicable, and the resorption theory to the latter.

"Injuries and Diseases of the Male Genital Organs," by H. Royes Bell, F.R.C.S., includes injuries and diseases of penis, affections of scrotum, hydrocele, hæmatocoele, varicocele, anomalies of testis, affections of cord, injuries of testicle, orchitis, tumors of testicle, and functional disorders of male genital organs. Very concise and thorough descriptions of these various diseases are given, and the sections on "Tumors of the Testicle" and "Functional Disorders" are especially worthy of careful reading.

Professor Parvin has written a very excellent paper on "Injuries and Diseases of the Female Genital Organs." It includes the pathological changes, traumatism, and functional lesions of these parts that may demand surgical treatment for their relief or cure. Emmet's operation for laceration of the cervix uteri is thought well of in suitable cases by Professor Parvin, but it is not to be un-

necessarily resorted to. He writes, "While the mortality is not great, in view of the important benefits which this procedure confers when employed in suitable cases, and while proper precautions will no doubt very much lessen this death-rate in the future, it is important that the operation should not be regarded as entirely devoid of danger, and thus rashly advocated or recklessly performed." Perineal lacerations are very fully discussed, and we think with Professor Parvin that it is good surgery, when such lesions do occur, to perform the immediate operation. The very formidable operation of extirpation of the entire uterus, in cancer of this organ, we have always regarded as scarcely to come within the limits of justifiable surgery; yet the operation has its advocates. Professor Parvin writes concerning it, "Extirpation of the uterus for cancer is being so frequently done, at least abroad, and is, if not beginning to be more generally received as a legitimate operation, at least so much less decried than it was at first, that the vaginal method of its performance will be given."

The paper by Dr. Robert P. Harris on "The Cæsarean Section and its Substitutes; Laparotomy for Ruptured Uterus and for Extra-Uterine Fœtation" is a most interesting and valuable study of these operations; and all that can be of any assistance to the surgeon, if so unfortunate as to be required to perform any of these operations, he will certainly find in this article. Of the various methods proposed in order to perform the Cæsarean section, Dr. Harris gives the preference to the Porro operation. He writes, "The Porro operation has entirely superseded the old method in most of the lying-in hospitals of Europe, and has reversed their tables of mortality completely. . . . It is true that antiseptic measures, preparative treatment, and early operating have had much to do in effecting this, but there is also a very decided diminution of the death-rate, due to the operation itself."

"Ovarian and Uterine Tumors," by Charles Carroll Lee, M.D. This paper includes ovarian and uterine tumors, oöphorectomy, and hysterectomy. The operation of ovariectomy is very fully described, the directions for its performance quite explicit, and strict antiseptic precautions are insisted upon. Battey's operation is minutely described, the indications for resorting to it are given, and include two main groups,—1. Neurotic conditions from ovarian irritation; 2. Hemorrhage with or without uterine tumors." In regard to the

propriety of performing this operation, Dr. Lee writes, "As to the clinical importance of Battey's operation, it may be said to be still *sub judice*; but, in properly selected cases, each year's experience shows its greater value."

Professor Ollier's paper on "Inflammation of the Bones," although it is one of the briefest in the volume, is, however, one of the most valuable. The subject is treated in a most masterly and scientific manner. More especially is the section relating to the "Influence of Osseous Inflammation on the Growth of Bones, and the Remote Consequences of Acute Inflammations occurring in Infancy and Adolescence," of interest to the surgeon. This phase of the subject has been but little studied, and the practical conclusions drawn by Professor Ollier are of the greatest importance in the treatment of this class of diseases. There is much that we would like to discuss contained in this contribution, particularly the views expressed in regard to the various pathological phenomena which are said to take place in the course of the different inflammatory processes occurring in osseous tissue; space, however, will not permit, and we can only advise a careful reading of the views here found. In writing on the infectious inflammations of bone, Professor Ollier is not yet ready to accept a septic micrococcus as the only etiological factor in this disease. He writes, "However it may be as to the specific character of these microorganisms, which we should not yet either reject or adopt, we shall find in our clinical study of the affection strong reasons to admit a primary infection." The section on the "Treatment of Bone Inflammations," based, as it is, upon a most thorough study of the pathological changes, seems to us to admit of no question as to its correctness, and an adoption of the advice given will rarely fail to be advantageous. Professor Ollier is a firm believer in antiseptic surgery, and an ardent advocate for its employment in bone-operations. He says, "In operations upon man and in experiments upon animals, it is possible nowadays, by means of vigorous antiseptics, to preserve the vitality of bone-tissue after the severest traumas. Formerly necrosis almost always resulted under these circumstances; the wounds became inflamed, and, the vessels of the bone being obliterated, its death was the inevitable consequence."

"Scrofulo-Tuberculous and other Structural Diseases of Bones," by Eugene Vincent, M.D. This article, from the pen of a pupil

of Professor Ollier, is, as would be expected, an interpretation of the advanced views held upon the nature of these lesions. Scrofula and tubercle are considered together on account of the similarity of their pathological histology; indeed, the writer says, "Scrofula is only a mitigated manifestation, initial and usually external, of tuberculosis, and it leads to the latter more or less rapidly." In seeking to ascertain if there is present an infecting agent in tuberculosis, M. Vincent writes, "The general tendency of thought is at present altogether in favor of a parasite, which, in spontaneous tuberculosis, is introduced into the organism by the air-tubes, or the digestive or other passages, fixes itself in the tissues and fluids, the blood especially, and undergoes evolution there, when the soil is favorable to it by a defect of resistance, hereditary, innate, or required." He further adds, "The bacillus (of tuberculosis) might be considered the universal criterion of tuberculosis, and might take the place of the gray granulation, the tuberculous follicle, and the giant-cell. Nevertheless, a conclusion must not be reached too hastily. For MM. Malassez and Vignal have just declared, in a communication to the Société de Biologie, that they have not found any bacilli in lesions which clinical observation and experimentation have shown to be undoubtedly tuberculous; and that they have found in them another form of micro-organism,—micrococci joined in zöoglear masses. There would appear to be, then, a tuberculosis with bacilli and a zöoglear tuberculosis; and I would add, there are still many obscurities to be cleared up, in spite of the progress made. It is evident that clinical observation remains, up to the present time, our surest guide." And, again, in writing on encysted tubercle in bones, he says, "The micro-organism of encysted tubercle is probably not the same as that of tuberculous osteopathies with a more markedly invading and acute course. It may not be the bacillus of Koch; it may be one of its evolutionary forms, either more perfect or less advanced. It is quite reasonable to think that the different forms of tuberculosis depend upon different micro-organisms, or, better still, upon a single parasite with many metamorphoses, and which, according to its soil, goes more or less completely through the cycle of its possible destiny." From these quotations it is evident that the specific nature of tuberculosis is accepted by M. Vincent, and we ourselves have, from our own observations and study of this disease, been

gradually led to believe that the views of those who advocate a micro-organism as the cause of tuberculosis are more in accordance with a scientific understanding, and more capable of explaining the different phenomena of this affection, than any other previously advanced theories. Caries, which has formerly been considered an inflammatory process in osseous tissue and the analogue of simple inflammation in the soft tissues, is placed by M. Vincent among osteopathies which are probably tuberculous. He writes, "The clinical course and the microscopic lesions being the same in caries and tuberculous affections of the bones, we must look to histology and to experimentation for proofs of the tuberculous nature of the former. Histology has discovered tuberculous nodules in caries." He further writes, "It is possible that the parasite may be a different one, and that, in looking for the bacillus, the special micro-organism of caries has not been seen. This point requires further investigation. But we may conclude even now, from what is admitted, that caries is a tuberculous affection of the bones grafted upon a chronic rarefying osteitis." Spina ventosa is also placed in the same class with caries, and considered to be a disease of tuberculous nature. As an evidence of the opinion of M. Vincent in regard to the nature of these bone-lesions, we quote the following: "The more we advance in the study of diseases of bones, the more we see the ill effects of tuberculosis multiply. I am persuaded that the greater number of cases of periostitis and osteo-periostitis, in children and in cachectic adults or old people, are caused by deposits of tuberculigenous parasites, and by their evolution, which varies according to their peculiar nature, the soil invaded, and the part of the soil in which they collect and remain." The section on the "Treatment of Tuberculo-Scrofulous, Osteopathies" demands careful study. Both general and local measures are advised; the former more especially, "since the affection of the bones is only a manifestation of the constitutional vice, hereditary or acquired, which has engendered it." Local treatment is to lend its assistance to the general treatment, and antiseptic precautions are always to be used. We only mention the sections on rachitis, osteomalachia, and fragilitas ossium in order to direct attention to the views of M. Vincent.

Professor Poncet has written the article on "Tumors of the Bones." These neoplasms are frequently a source of considerable perplexity to the surgeon. Their diagnosis is

often very difficult, and their treatment generally demands an operation. A study of Professor Poncet's contribution, we think, cannot fail to assist both in diagnosing and treating this class of lesions.

"Orthopædic Surgery: the Treatment of Deformities," by Frederic R. Fisher, F.R.C.S. This paper includes club-foot, curvature of bones, deformities of lower and upper extremities, lateral spinal curvature, wry-neck, and congenital dislocations. The various forms of club-foot are described in a concise and clear manner. The pathology of this lesion is given, in so far as well-established conditions are known; undecided or disputed points are not discussed. The treatment of the several varieties of club-foot is described in full, and, with few exceptions, we find it judicious and skilful. The directions given for performing the operation of tenotomy are very explicit and clear, but we prefer the employment of the blunt-pointed knife to divide the tendon, after making the incision of the skin and fascia, more often than recommended by Mr. Fisher; it is equally as effective, and not so apt to cause a mishap as the sharp-pointed knife. No reference is made to the treatment of young children by means of manipulation without operation, nor to forced manipulation in bad cases. Both these procedures have given good results, and are very strongly urged by some surgeons. The Adams's modification of Scarpa's shoe is used when applicable by Mr. Fisher in the mechanical treatment of club-foot. This shoe is undoubtedly quite effectual, but very clumsy, and we much prefer some of the lighter and neater American-made shoes. Rickets and curvature of the bones are said to occur independently one of the other. The former exists without the latter, and "children acquire curvature of the bones of the leg who present no indications of the rachitic taint." The weight of the body alone is thought to occasion this deformity by Mr. Fisher.

An appendix is added to the volume, in which are found three very important and ably-written papers,— "Construction and Organization of Hospitals," by Edward Cowles, M.D.; "Preparation of Military Surgeons for Field Duties, Apparatus Required, Ambulances, Duties in the Field," by Bennet A. Clements, M.D., U. S. Army; and "A History of Surgery," from the erudite pen of Dr. George J. Fisher.

To conclude our notice of this volume, we wish particularly to notice the several translations made by Dr. Dulles. He has ren-

dered the contributions of MM. Duplay, Ollier, Vincent, and Poncet into such smooth and even English that the reader does not recognize he is reading a translation, and we feel confident that the ideas of the original writers have been correctly conveyed. The general index, compiled by Dr. Wharton, is also a very satisfactory feature of the book, and adds much to its value. The labor required to complete such a task can only be appreciated by one who has been engaged in a similar work, and we are grateful to Dr. Wharton for so ably doing his laborious task. The volume, as a whole, is in every respect well worthy to be placed among the previous volumes of the "International Encyclopædia of Surgery;" and what more praise can we bestow?

J. H. C. S.

Correspondence.

COCAINE IN OPERATIVE SURGERY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—A few months ago it was said that the most unhappy ophthalmologist in the world was the one who had not written an article on cocaine. It now seems that the surgeon who has not reported a case or two in which he has successfully used cocaine as an anæsthetic on other than mucous surfaces is eking out a very unenviable existence. Therefore, in order that I may enjoy my share of happiness in the future, I desire to report two cases in which cocaine was used with very happy effects.

One, being a case of circumcision, might be very properly termed a mixed case, as the solution was painted on the mucous surface, and also injected hypodermically between the integument and the mucous membrane in the following manner: After painting the mucous surface thoroughly with a four per cent. solution of cocaine, the prepuce was drawn forward and grasped with forceps in the hands of an assistant, when forty drops of the same solution were injected beneath the integument in four different places. After ten minutes the operation was performed in the usual manner, without any pain whatever.

The second case was an ulcerating epithelioma on the dorsal surface of the hand of a gentleman aged 70. An Esmarch bandage was applied from the tips of the fingers to a point midway between the wrist and the elbow, where several turns of the bandage were made around the arm and left *in situ*, while that por-

tion enveloping the fingers and hand was removed, and the tumor, which was circular and one and one-fourth inches in breadth, was freely injected at the base with a four per cent. solution of cocaine, and, after the lapse of twelve minutes, was removed with the scalpel, and the edges brought together with no pain whatever, except as the last suture was being put in; the patient, sitting on a chair, observing the operation and feeling perfectly comfortable, as he himself expressed it.

LEWIS SCHOOLER, M.D.

DES MOINES, IOWA, June 19, 1886.

COCAINE IN DYSENTERY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In a late epidemic of dysenteric flux, confined, in its worst forms, to our river and creek bottoms, under malarial influences, after exhausting my skill in trying to relieve the terrible griping and tenesmus, compelling the sufferer to be up over the chamber every few minutes, I finally made a trial of the hydrochlorate of cocaine, and with great satisfaction. It had the happiest effect, relieving the patient of all pain, and enabling him to drop into a natural and refreshing sleep. I injected 2 to 3 drachms of a four per cent. solution, with a small glass syringe, often enough to give the necessary relief, which about averaged every four hours. I was so much delighted with it, and the profession here take such interest in it, that I thought it might be well to call the attention of the profession to it through the columns of the GAZETTE. I deem it unnecessary to occupy your valuable space in detailing the general treatment of these cases. Will state that while the patients dreaded all other preparations that I injected into the bowel, intended to relieve or palliate their intense suffering, they soon began to beg for the cocaine.

Very respectfully,

R. L. HINTON, M.D.

PRESCOTT, ARK.

FLUID EXTRACT OF BERBERIS AQUIFOLIUM AND SULPHATE OF BERBERINE AS A SUBSTITUTE FOR QUININE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—There are so many persons who cannot take the salts of quinine, and so many others on whom they have ceased to have beneficial effects, that in malarial districts it is matter of great importance to have a good

substitute for the preparations of Peruvian bark. After extended observations for three years, I can venture to state that berberine will answer in the place of quinine. It will sometimes do more than quinine in cases of quartan ague. I have used for three years the fluid extract of berberis aquifolium in malarial fevers. To break an expected paroxysm of ague, or remittent fever, or bilious dysentery, I begin twelve hours beforehand, and give a teaspoonful every three hours, until four doses are taken. It acts very freely on the skin, often causing free perspiration, which is sticky, like that caused by the preparations of quinine. Lately I have used for the same purpose sulphate of berberine administered in pills or capsules, the capsules being best, as it is difficult to keep the pills dry. In the same doses, and given in the same way, it will do all that quinine will in malarial fevers. I use quinine when there is no obstacle to its use, as it is cheaper.

I prefer it to quinine in quartan ague, as it is more reliable, and will break the chills after arsenic fails.

Before many years the preparations of berberine will become of great importance in the treatment of malarial fevers, and will rank high as tonics. I hope the profession will test the correctness of my observations, and I feel confident that one trial will result in more.

JNO. BROWNRIGG, M.D.

COLUMBUS, MISS.

EXTRACT OF EUCALYPTUS AND GLYCERIN AS A DRESSING FOR ERYSIPELAS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Recently I have used a dressing of ext. belladonna and glycerin. Last week I substituted ext. eucalypti fluid, for the belladonna, according to the following:

R Ext. eucalypti fluid., part 1;
Glycerinæ, parts 3. M.

This mixture was applied freely over the eruption, out on to the sound skin, covered in with a pad of cotton, and changed often enough to keep the part thoroughly moist and protected from the air. The effect was very satisfactory. There was no subsequent smarting and burning of the disease, and the spread of the eruption was more limited than I ever obtained by any other dressing. The bowels were kept free by the hyposulphite of sodium, and the tincture of iron was given. Having obtained better results than by any former

treatment, I shall try the combination next time.

E. CHENERY, M.D.

65 CHANDLER STREET, BOSTON,
June 18, 1886.

HYDRASTINE—A CORRECTION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your issue for May 15, 1886, in a foot-note appended to my article on "The Physiological and Therapeutic Action of Hydrastine," I stated that Messrs. Parke, Davis & Co.'s hydrastine, which was used in the experiments on man, therein related, was only about one-sixth the strength of Merck's hydrochlorate of hydrastine, which had been used in the experiments on animals. Comparative experiments just completed, and which were made with Messrs. Parke, Davis & Co.'s hydrastine and hydrochlorate of hydrastine and with that of Merck's hydrochlorate of hydrastine, show that they are of about equal strength. The impression of the inequality between the two different manufactures of hydrastine was principally based on the greater burning and pungency which the Merck's preparation produced both on the tongue and when injected subcutaneously. While it is true that Merck's preparation produces greater irritation than that of Messrs. Parke, Davis & Co.'s hydrastine, it is also true that it produces no more than the hydrochlorate of hydrastine manufactured by the latter, and the lethal dose of both of them is about the same in the frog. This difference between the salt and the alkaloid was found too late for verification by experiment before the issue of the journal which contained the article, and in order to avoid any toxic effects which the Merck's preparation might produce if given in the prescribed dose the note was, and, as it is now found, too hastily inserted.

In justice to Messrs. Parke, Davis & Co. this correction is gladly made by

Sincerely yours,

THOS. J. MAYS, M.D.

June 23, 1886.

A PORTABLE TURKISH BATH.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In all cases of deep-seated inflammations, whether of the cranial, thoracic, or abdominal cavities, the indication is to equalize the circulation, and thereby relieve local vascular fulness; the same is true of all congestions, that by enlivening the general

circulation we can lessen or remove the difficulty.

In urgent cases of croup, delirium tremens, and those in which rapid serous effusion is an alarming symptom, such a provision will always be a very great assistance.

The apparatus I employ has the following construction: There is a horizontal tube two inches in diameter and four feet long, and a vertical one two feet long, gradually expanded into a funnel-shaped extremity six inches in diameter at the base, and joined to the horizontal by an elbow, the several parts being put together without solder.

Under this funnel is placed an alcohol lamp burning a wick three-quarters of an inch in diameter; and the funnel is perforated by several openings below the level of the flame to afford air-current. Within the funnel, and just above the lamp, are two cross wires to support a cup holding six ounces of water; the cup having shoulders, so that when inserted between the wires and turned it will be supported above the flame by them. To use the apparatus, insert the extremity of the tube under the bedclothes, placing also a vertical strip of lath, or the like, a foot long near it, to make space for hot air, partially fill the cup with hot water, light the lamp, tuck the clothes close around the patient, and it is ready for operation.

In a recent case I witnessed its effect in the treatment of a patient suffering from general anasarca, where the accumulation was enormous, and the tension so great that the venous circulation of the skin was almost arrested, causing it to look black and crack open. There was pericardial effusion, and also oedema of the lungs so extensive that it seemed almost impossible for the patient to survive many hours.

In this case there was mitral insufficiency and an abundance of albumen in the urine, but no tube-casts; there seemed to be general glandular torpor, and she was given a prescription containing Donovan's solution, fl. ext. squills, and digitalis. Of course this was an aid to the treatment; but the abstraction of water through the skin by means of the apparatus did the most to relieve her I am very sure.

The cost of this instrument is slight, and any tinsmith can construct it. I consider it of great value as an adjunct in the treatment of many cases, and of sufficient importance to merit a notice in any medical publication.

F. W. PATTERSON, M.D.

MILWAUKEE, WISCONSIN.

EUCALYPTUS AS A TOPICAL AGENT.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your journal of May 15 I noticed a short article under the head of "Eucalyptus as a Topical Agent," and beg leave to give my knowledge of some of the uses of that valuable drug to your many readers. You say, "According to the few cases Dr. Williams has mentioned, together with the data already published on this subject in previous issues of the GAZETTE, one is encouraged to believe that it can often be used with advantage locally; that there can be obtained from it all the benefits that are to be had by the employment of the tincture of iodine, solutions of nitrate of silver, salts of iron, etc.; and that it can be made use of when these could not be in consequence of some objectionable features attending their application."

The consideration you have here given eucalyptus is true in every respect, according to my experience, as I have given it many a severe trial during the past three or four years, and I now use it almost altogether in place of tincture of iodine, nitrate of silver, etc., as a topical agent in all hyperæmic conditions of a local nature, no matter where. I combine a good fluid extract with an equal quantity of glycerin, which produces much more satisfactory results than the fluid extract alone, as in the latter form it dries too quickly and is somewhat irritating. To an ulcerated and enlarged tonsil, or inflamed throat, its curative action is very prompt and efficient. Of the above mixture, I apply, or direct to be applied, with the aid of a tongue-depressor and probang, a small quantity twice daily for two or three days, and then *pro re nata* until cured, directing the brush to be washed in alcohol or strong salt water, or it will become hard from the resin in the eucalyptus. As an application in metritis and endometritis, ulceration, or, in fact, any inflamed condition of the uterus, I use the following mixture with almost invariable success, viz.:

R Bismuth. subnit., ℥ss;
Morph. sulph., gr. xx;
Ex. eucalyptus, f℥ii;
Glycerin., ad ℥ii. M.

S.—Shake, and apply with absorbent cotton on a probe.

Upon its application to an inflamed part a sense of warmth is experienced, followed almost immediately by a feeling akin to the expression of "that feels good, and I believe it will help me."

Ten or fifteen drops of the fluid extract dropped in the water-chamber on an inhaler—

something like Dr. Barber's—that generates vapor of muriate of ammonium, and used two or three times daily, is, speaking generally, good treatment in catarrhal affections of the head and throat.

W. B. KETCHUM, M.D.

PALO PINTO, TEXAS.

HYOSCYAMUS IN SINGULTUS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Having seen a good deal written on the different preparations of hyoscyamus and their effects on diseases, there is one condition or symptom for which I have never seen the remedy recommended, excepting in one instance where the tincture was used with several other ingredients. This condition is singultus in low forms of disease. About six years ago I was called in consultation in a case of an old gentleman in the last stage of pneumonia, in whom hiccough had set in, and was very frequent and extremely annoying. The attending physician had tried several remedies without success. I thought of hyoscyamus, and proposed it, which was agreed to, and I made several pills, giving them to the other physician. He gave one, and in a short time the hiccough stopped, and did not recur afterwards. He took only the one pill, and commenced improving, and recovered. Some time afterwards I had a case in which singultus occurred, and was extremely annoying. I thought of my first trial with the extract of hyoscyamus, and gave a pill, which was the last also, for the hiccough ceased, and I did not have to repeat the dose. The case recovered. Since then I never dread singultus in those low forms of disease of any kind. I have not tried any other preparation of hyoscyamus but the simple extract, that proving good enough so far. My aim in writing this is that others may test the advantages of this treatment.

Very respectfully, etc.,

J. A. CULLUM, M.D.

COTTONPORT, LA.

Notes and Queries.

THE TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I would like to ask through the columns of the THERAPEUTIC GAZETTE for a remedy for the poison of the wild ivy. I have tried the usual remedies—sweet oil and acetate of lead—with very little success.

I shall be glad to hear from any of your subscribers.

Respectfully,

L. B. PARSELL, M.D.

CLOSTER, N. Y.

[The editor of the *Journal of Cutaneous and Venereal Diseases* (June, 1886) has had a similar inquiry made to him, and, since his experience in the matter is so extensive, his views must be particularly reliable. We therefore print nearly in full, for the benefit of our correspondent, the advice which he gives on this subject.

Medical literature abounds in recipes which have been from time to time recommended as possessing specific virtues in the treatment of this distressing affection; but, however valuable they may have proven in isolated cases, their claims to infallibility have, unfortunately, not been confirmed when submitted to the test of extended clinical experience. It is well at the outset to recognize the fact that *there is no specific for the cure of dermatitis venenata*. It is to be treated on the same general principles as are indicated in the treatment of other inflammations of the skin directly provoked by external irritating agencies. The inflammation is self-limited, with a tendency to spontaneous recovery, and the principles of rational treatment are to relieve the subjective sensations of burning and itching, to modify the inflammatory action, and to prevent the extension of the eruption.

It is well known that the eruption first develops upon parts brought in direct contact with the leaves of the plant, or exposed to their emanations, as the hands and face. The poisonous principle of the rhus resides in a volatile acid termed *toxicodendric acid*. It is still a moot point whether the extension of the inflammation to other parts of the body is a systemic effect, consecutive to absorption of the poisonous principle, or whether it is due to a direct inoculation of the parts by the nails, as in scratching. The latter view is, Dr. Morrow thinks, the most probable; certainly, clinical experience conclusively proves the auto-inoculability of the eruption.

With a view of circumscribing the spread of the eruption, the patient should be cautioned against bringing the hands in contact with other parts of the body; especially should he be enjoined against handling the genital parts, as the integument of this region is peculiarly susceptible to the irritant action of the rhus. It is a matter of common observation that the genital parts of the male are much more frequently the seat of the eruption than the cor-

responding region in the female, and the explanation is found in the direct transfer of the irritating agent by the fingers in handling the parts during the act of micturition, in dressing, etc.

The treatment of the acute stage of the eruption should be essentially soothing and protective. For this purpose, dusting powders and sedative or mildly astringent lotions should be used.

A lotion which Dr. Morrow is in the habit of employing with good results is the following:

R Sodii hyposulphitis, ℥i;
Glycerinæ, ℥ss;
Aq., ad ℥viii. M.

Apply with compresses dipped in the solution and frequently renewed. He has also used a strong solution of the sulphite of sodium with marked benefit. Two years ago, he treated several cases by simply painting the affected surfaces, every two or three hours, with sweet spirits of nitre. It seemed to have a very favorable effect in relieving the cutaneous congestion, besides imparting, as one of the patients expressed it, a "cooling sensation" to the surface. In cases where the continuous application of a lotion is impracticable, freely dusting the surface with an absorbent powder is to be recommended. The following may also be used:

R Pulv. zinci oxidi, ℥ii;
Pulv. bismuthi subnitratæ, ℥i;
Pulv. amyli, ℥v. M.

It is important that the affected surface should be kept copiously covered with the powder; an occasional sprinkling does little good. If there is much burning heat present, a little powdered camphor (℥ss to the ℥i) may be added.

When the more acute eruptive features have begun to subside, a mild, soothing ointment should be employed. For this purpose there is nothing better or more universally applicable than the ordinary benzoated zinc ointment. Another very excellent dressing in this stage of the disease is the Lassar paste:

R Pulv. zinci ox.,
Pulv. amyli, aa ℥ii;
Vaselini, ℥iv. M.

It is not claimed that the plan of treatment outlined above is in any sense specific. The writer has employed it, modified, of course, to meet indications in particular cases, in a large number of cases, with the effect of relieving distressing symptoms, and materially hasten-

ing recovery. The good effects of the same treatment will be found to vary in different patients. There is a great difference in the susceptibility of different individuals to the irritant action of the rhus poison, and the difference in susceptibility is perhaps equally marked in relation to the influence of medication.

Two cases of rhus-poisoning came under Dr. Morrow's observation last summer, both members of the same family; in both, the initial features of the eruption were equally severe, both were submitted to the same treatment; in one case it was promptly effectual, in the other the inflammatory symptoms continued, with scarcely any abatement, for several days.

Should the editor's treatment not fulfil the conditions demanded by our correspondent, he need not be discouraged, especially if he believes that in a multitude of remedies there is safety. It is not possible to here enumerate the entire list of remedies which have been recommended in the treatment of rhus-poisoning, for their name is legion. To give only a few which are claimed to possess a remarkable efficacy in subduing the symptoms: lime-water; alum curd; a saturated solution of bicarbonate of sodium; a strong solution of chlorate of potassium; a solution of sulphate of zinc (℥ss to the pint); a solution of carbolic acid (gr. ii to iv to the ℥i); a weak solution of sulphate of copper; dilute lead-water, etc. Compresses to be wet with these lotions, and applied every hour or two through the day. Dr. White, of Boston, and others, highly praise the efficacy of the ordinary black wash. Dr. Brown, U.S.N., claims that bromine (10 to 20 drops to the ounce of olive-oil or cosmoline) is a specific.

To turn now to the vegetable materia medica: a decoction of white-oak bark; a decoction of the bark or leaves of the elder; an infusion of the sweet fern; the tincture or fluid extract of serpentaria, lobelia, sanguinaria; infusion of the bark of the red sassafras, with sassafras tea, *ad libitum*, internally, have all been highly spoken of. Probably the most efficient of the vegetable remedies is the grindeledia robusta, which may be used in the form of the fluid extract, diluted in ten to thirty parts of water.

Dr. Hyde speaks enthusiastically of an ointment made by incorporating a decoction of the inner bark of the American spice-bush (*benzoin odoriferus*) with cold cream. Dr. Edson highly extols the virtues of gelsemium in the treatment of rhus-poisoning (*Medical Record*, vol. xxii. p. 120). His formula is:

R Acidi carbolici, ℥ss;
Fl. ext. gelsemii, ℥ii;
Glycerini, ℥ss;
Aq., ad ℥iv. M.

Cloths to be moistened with this lotion and applied to the affected parts.

This, he claims, with the internal administration of the fluid extract of gelsemium every three hours, effectually relieves the burning and itching, and the eruption speedily disappears.]

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Will you kindly give your opinion in your Notes and Queries, what would be the effect upon the system of the excessive use of butter on bread, say spreading bread at least a quarter of an inch thick with it? I think that doctors disagree on this subject, while I have heard some say that such a habit was not good for the system. I know of one case where the doctor actually requested one of his patients to use it spread on very thickly.

Yours, etc.,
READER.

MAINE, June 22, 1886.

[Every one remembers the famous fable of the satyr who indignantly turned out into the storm the belated traveller because he blew his hands to warm them and his porridge to cool it. This act illustrates very well the subject of our correspondent's letter. The doctor who denied butter to his patient and the doctor who ordered butter for his patient were each probably right. Butter is a fat, and in all scrofulous patients the more fat that can be digested the better. If, however, the digestion of the patient be feeble, withholding of fats may be essential. Further, if a patient have a tendency to obesity, or to fatty degeneration of one of the internal organs, abstinence from the use of butter and other fats might be a necessary part of the treatment. As a fat which is easily digested, good butter is an important remedial agent, one which we think ought to be more used than it is, but the question of its administration or its withholding is one to be settled by the judgment of the practitioner for the individual case. Rancid butter is always bad.—EDS.]

THE AMERICAN RHINOLOGICAL ASSOCIATION will hold its fourth annual meeting at St. Louis, Mo., on the 6th of October next.

SOME USES OF THE TIN OLEATE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I used the tin oleate some months ago on my finger-nails, which commenced to split and break soon after I left the army, the result of scurvy, contracted in the military service. I anointed the nails every day with the oleate, and at night applied it on a narrow flannel bandage. In about two months all the nails were *sound* and *tough*. I applied the oleate to the nails of a young lady friend with like success. It is also a beautiful polish for the nails.

Respectfully,

THOS. H. IRQUHART.

HASTINGS, NEB.

TARTAR.

The situations upon which deposits of tartar are found upon the teeth are, in order of frequency, the lingual aspect of the inferior incisors,—that is, opposite the openings of the ducts of the submaxillary and sublingual glands, the buccal surfaces of the upper molars which face the orifices of Steno's duct, next the buccal surface of the lower molars, and sometimes the lingual surface of the molars of both jaws. The deposit is never found upon the lingual aspect of the upper incisors, which are not bathed with saliva, and, moreover, are constantly being swept by the tongue. It is capable of being formed in great abundance, especially when from any cause, such as a carious tooth, one side of the mouth only is used for mastication. Tartar is composed chiefly of earthy phosphates and carbonates, with which is mingled a certain proportion of organic matter, epithelial scales, fatty particles, filiform fungi, vibrios, and monas. The relative proportion of phosphates or carbonates varies very considerably in different analyses, and this is due to the material being taken from different parts of the mouth. Thus, if from the buccal surface of an upper molar, it will be richest in carbonates, like the parotid saliva; whereas, when taken from the back of the lower incisors, it contains an excess of phosphates. Tartar is simply a deposition by precipitation of the salts held in solution in the saliva, which is brought about by its contact with air or mucus. The quantity of tartar varies largely in different subjects, for some salivas contain a small proportion of salts, and therefore the deposit is small; also if the precipitate meets with an acid—such as is so frequently found round the necks of the teeth

and due to fermentation—sufficient to neutralize it, it will be redissolved. Thus the presence or absence of tartar has a clinical significance. If it is very abundant, it indicates an alkaline reaction both of the saliva and of the parts around the teeth, and a consequent immunity from caries; but if allowed to accumulate, it produces gingivitis by simple traumatic irritation. In some very rare cases it is entirely absent, owing to an acid reaction in the mouth, which leads to the most disastrous ravages upon the teeth. Between these two extremes there is every mean. The gingivitis due to tartar varies according to the quantity deposited; in a mild case there will be merely a line of redness along the free border of the gum; in a more severe case the roots of the teeth will be stripped of gum and its place taken by tartar; the gum will be festooned, have a fungating appearance, and bleed at the slightest touch; the teeth will loosen and change their position, owing to the inflammation having extended to the alveolo-dental membrane and the absorption of the alveolus. The treatment consists essentially in a vigorous use of the tooth-brush and the periodical removal of the incrustation. Any tooth-powder or preparation which will remove it must be acid, and therefore very deleterious to the teeth themselves. Mr. Bland Sutton has found accumulations of tartar upon the teeth of monkeys, kangaroos, and lemurs at the gardens of the Zoological Society, where it is an occasional cause of death from septic pneumonia. These deposits are almost invariably found in association with a carious tooth or necrosed bone.—*Lancet*, June 5, 1886.

TEREBENE.

Certain authorities on lung and throat disease have recently given prominence to terebene as a remedial agent in the winter cough of old people. It has also been found to be an efficient antiseptic, and has been used to some extent in surgery.

Clinically, it is a hydrocarbon, and to the chemist is of interest as an isomer of turpentine. The pharmacist, in the course of his duty, will have it to dispense, and therefore to a study of its chemical properties he must add a knowledge of its pharmaceutical adaptations.

Terebene is a clear, colorless liquid; has a faint thyme-like odor, and has no effect upon a ray of polarized light. This last characteristic distinguishes it positively from turpen-

tine, and the odor by some is described as resembling much that of fresh pine shavings.

According to Mr. J. N. HURTY (*Pharmaceutical Record*, July 1, 1886) terebene can be easily and cheaply made by adding to any convenient quantity of turpentine oil five per centum of its weight of U. S. Pharmacopœial sulphuric acid. The acid must be added slowly, almost drop by drop, the turpentine being contained, preferably, in a glass flask, and must be kept very cool. If the mixture exhibits a tendency to grow so warm as to be uncomfortable to the hand, the addition of the acid must be suspended until the heat is subdued. After all the acid is added, it is best to transfer the mixture to a porcelain capsule, so as to expose thoroughly to the air, which exposure should continue for twelve or eighteen hours. This insures complete chemical change, and permits the subsidence of the tarry product, which immediately forms when the acid is added to the turpentine, and which is not wanted.

After standing for the specified time, the clear liquid is carefully decanted from the tarry substance, transferred to a glass retort, and distilled. The distillation can be effected without a condenser if a retort with a long beak be used, the end of which projects into a well-cooled receiver.

It is essential that a correct thermometer be inserted in the tubulure of the retort. Heat can be applied from an ordinary rose Bunsen burner, the retort being raised just high enough to prevent the flame from striking it. Sometimes it will be found necessary, in cold weather or if, perchance, a draft passes through the laboratory, to surround the gas-flame and retort-bulb with a short piece of stove-pipe, which serves to conserve the heat which otherwise would be dissipated.

Some few drops of distillate will appear at about 130° C. At 150° C. the distillation will proceed freely, the thermometer gradually rising until 160° is reached, where it will stand quite steadily until all of the compounds composing the substance we call terebene have passed over. At the first intimation of a rise beyond 160° C., the distillation must be controlled by either lowering the heat or, if the distillate has slackened, discontinuing the operation. The products of this reaction, distilling above 160°, are not wanted for medicinal purposes.

The distillate will be more or less milky, owing to the small quantity of water formed in the reaction, which distils over; and, moreover, will be acid because of a little sulphurous

acid. Both of these products can be removed by agitating with a small quantity of freshly-ignited potassium carbonate. Separation of the terebene from the compounds formed is slow, but in a few hours is complete. The imperfect terebene thus obtained must be treated with sulphuric acid exactly as heretofore detailed, then distilled and purified. Indeed, these processes must be repeated until the terebene answers to the following requirements: Clear and colorless, thyme-like odor, boiling at 160° C., specific gravity .860, .862 at 15° C., optically inactive, mutual in reaction.

This product—allene—is resolvable by repeated fractional distillations into terebene $C_{10}H_{16}$, boiling at 150°; cymene $C_{10}H_{16}$, boiling at 175°. The substance left in the retort is principally colophene $C_{20}H_{32}$, boiling at 318°.

When it is stated that terebene is an isomer with turpentine, it is meant that they have the same formula, which is $C_{10}H_{16}$. The word isomer is from two Greek words, the first meaning equal and the second part. Hence, isomer, of equal part or measure.

Pharmacy of Terebene.—Medical authority has fixed the dose of terebene at from 5 to 20 drops, and it is prescribed to be given as a vapor, and also to be exhibited in inhaling apparatus. As much stress is placed upon its topical effect, no pharmaceutical form for administration would be admissible that would interfere with this desired end. Two reasons then exist for excluding the pill form. First, the dose is too large to admit of making pills from it of convenient size, even 5 drops requiring an astonishing quantity of absorptive substance—powdered marshmallow, liquorice-root, elm, and tragacanth, etc.—to take it up. Second, the pill form would prevent, obviously, all local effect.

The lozenge form suggests itself as applicable, and likely to meet all requirements. A lozenge, however, to contain a maximum dose of terebene, 20 drops, must be very large if made simply like the U. S. Pharmacopœial peppermint lozenges. To contain even 5 drops, a lozenge twice the size of those just mentioned is required. This difficulty is caused by the non-absorptive qualities of terebene, it seeming to have no affinity of contact with any pill or lozenge-forming substances. This repellant quality, so far as making into lozenges is concerned, can be overcome by making a heavy emulsion of the terebene, and thus introducing it into the mixture of sugar and powdered tragacanth.

The following formula works perfectly, giving a lozenge of good size, holding the terebene satisfactorily, and possessing a taste far from unpleasant. Take of—

Terebene, \mathfrak{z} iiiss;
Acacia, \mathfrak{z} iii;
Water, \mathfrak{z} ii;
Powdered sugar, \mathfrak{z} vi;
Powdered tragacanth, \mathfrak{z} ii.
Make 100 lozenges.

With the terebene, acacia, and water make, according to article, an emulsion, which add to the powdered sugar and tragacanth, previously mixed together. Beat into a mass, and make into lozenges. The emulsion form, for administration, meets every requirement save one.

The taste of terebene is pretty generally considered bad, and in emulsion its peculiar pungency most successfully salutes and thrusts itself upon the gustatory nerve. Pharmaceutically, however, the emulsion is a success, the following proportions, if observed, furnishing as fine a representative of that class as can be desired :

Terebene, \mathfrak{z} iv;
Powdered acacia, \mathfrak{z} iii;
Water, to make \mathfrak{z} ii;
Syrup of ginger, \mathfrak{z} i.

First rub thoroughly together the acacia and terebene in a dry mortar, add all at once the water, rubbing rapidly until the crackling sound appears, then add the remaining water and the syrup of ginger. This emulsion is not perfectly white, owing to the syrup of ginger, which is added preferably to simple syrup because of its flavor and pungency, which somewhat mitigate the taste of the terebene.

Oil of peppermint might be added to this emulsion with the effect of almost entirely covering up the terebene taste, but unfortunately there are many who dislike peppermint intensely, and hence it cannot be generally used. Oil of lemon improves this emulsion little, if at all, and hence cannot be recommended.

AUSCULTATION OF THE EYEBALL.

M. GENÉ has recently described to the Biological Society of Paris a new method of estimating the tension of the eyeball. This consists in auscultating the organ by means of M. d'Arsonval's telephone. The instrument is applied to the globe, and a sound, such as that of the interrupter of a faradization instrument, made to pass : the differences of degree and intensity of the sound, as per-

ceived by the observer, afford a valuable and accurate means of diagnosis. M. Gené's experiments being as yet somewhat incomplete, he hopes at some future time to lay the subject before the society in greater detail.—*Lancet*, June 5, 1886.

RHEUMATISM, GOUT, AND DIABETES.

The Croonian Lectures of the present year are mainly remarkable for the assiduity with which DR. LATHAM has attempted to introduce into general medicine an intricate, though necessary, knowledge of some of the intimate chemical processes which are collectively classified under the physiologist's term of metabolism. Were we able to picture accurately the various stages of the chemical processes occurring in the normal integration and disintegration of protoplasm, we should be possessed of knowledge which it is no exaggeration to say would speedily place within our grasp the secrets of nature. As an attempt to propound some of the most important vital chemical changes, every member of the profession must fully appreciate Dr. Latham's labors. But in the present state of physiological science his arguments can only be considered as more or less probably correct. Our information of the way in which a molecule of protoplasm or even albumen is built up is so vague and uncertain, that we have no solid groundwork whereon to build a superstructure. If, then, physiology is so unsettled, pathology must for all purposes be likewise indefinite. At the outset Dr. Latham appeals in large measure in support of his views to an ingenious analogy—first made, we believe, by Pflüger—between the properties of certain cyanogen compounds and those of living protoplasm. This analogy is very striking, and even if it does not actually represent the truth, it probably gives some idea of the difference between living and dead matter. It is a question of a difference in power, in potentiality. The chemical composition, the mere number of chemical atoms, is the same in urea and ammonium cyanate. Urea, however, represents dead matter, more stable but less energetic than ammonium cyanate, which is the representative of living matter in that it possesses energy with instability. Dr. Latham suggests that albumens are structurally cyan-alcohols combined with a benzene nucleus. The energy of albumens comes from their being cyanogen compounds. He shows how the various amide products of the animal

economy may be built up in the laboratory by various chemical interchanges.

What is rheumatic fever? Clinically it consists in the development of various well-known symptoms. How may these symptoms be excited? We have for many years past been taught to believe that causes acting on the central or peripheral nervous system may give rise to joint changes having a close resemblance to those of subacute rheumatism. Is rheumatism a disease of the nervous system? The experiments of Dr. B. Foster have shown that the introduction of lactic acid into the animal economy may be followed by the production of a certain set of symptoms closely allied in appearance to those of rheumatic fever. Does the lactic acid act on the joint structures and vessels directly or through the intermediation of the nervous system? Dr. Latham adopts neither of these views. The Croonian lecturer believes that the *materies morbi* of rheumatism may induce the arthritic signs by its action on the trophic centres presiding over the nutrition of the joints. Lactic acid is formed in excess, but must be regarded as a companion symptom with the other phenomena of rheumatic fever. Not that the acid itself is harmless; possibly it also induces symptoms on its own account. Dr. Latham fixes on uric acid as the irritant to the central nervous system in rheumatic fever. Where and how is the excess of uric acid formed? In order to follow this problem it is necessary to know that there are such bodies as amido-acids. One of these of most importance in our present connection is amido-acetic acid, glycoll, or glycocine. This acid enters into the formation of many important substances. By heating it and urea together, uric acid can be obtained. Glycocine may be formed in excessive quantities in muscular tissue; combined with cholic acid it forms a salt of bile. The liver, therefore, secretes it thus in combination. Now, there are several other ammonia compounds,—leucine, tyrosine, and taurin,—all of which are probably dealt with by the liver, which most likely converts them into urea. The capacity of the liver in this respect may vary for different ammonia compounds. Imagine that the glycocine is not transformed, or only partially so, whilst the other bodies are acted upon, then we should have urea and glycocine together; a conjunction not difficult to imagine, and which possibly actually occurs with the formation of uric acid. But there is the difficulty; such processes are possible, but have not been proved to occur.

On this view the liver is the great offender; on it the "sluggish" liver of our forefathers receives a new interpretation. There are many ways, however, in which the imperfect metabolism of glycocine may be brought about. Take an ordinary febrile catarrh, in which we may suppose that there is an excessive production of amido-acetic acid (glycocine) in the muscles. It goes to the various glands of the body,—liver, spleen, kidneys. Some of it gets converted into urea, and we hear no more of it. Other portions combine with urea to form uric acid, with more or less disturbance of the nervous system, according as the eliminatory organs are in good working order or not.

The vaso-motor system figures largely in Dr. Latham's attempts to explain feverish colds, rheumatism, etc. The vaso-motor system, as has been said of statistics, can be made to prove anything; any physiologist will grant such a proposition. The lecturer pointed out that muscles and glands have special secretory and vasal nerves; urari paralyzes the former in muscle and atropine in gland. The vessels may be dilated without increasing the secretion or metabolism, but still, as a rule, vaso-dilatation means excessive disintegration or descending metabolism. Taking this as a guide, we can easily follow Dr. Latham through the varying effects of exhaustion, paralysis, and stimulation of the various parts, cutaneous, muscular, and glandular, of the vaso-motor system. In rheumatism the (what Dr. Moxon would call) "Secretary of State for the Vaso-motor Department" is in a condition of exhaustion; it has loosened its reins of government; the local departments therefore run riot; or, in other words, there is excessive disintegration and vascular dilatation; the consequences as regards glycocine and the like we have above considered; at the same time lactic acid is formed in excess. In rheumatism, therefore, we cannot blame the liver; it does its ordinary share of work, but too much is put upon it, hence the uric acid and morbid irritation of the nervous system. But in gout it is another matter; the liver is primarily at fault; its secretory cells are not acting up to normal either from defective innervation or inherent weakness. It is possible that glycocine and urea may be conjugated by the renal tissue, and thus lead to the formation of the slightly soluble ammonium urate, some of which may pass away into the general circulation and be transformed into the sodium salt which is deposited in the joints of gouty subjects.

The far-reaching nature of Dr. Latham's subject is still further witnessed by its inclusion of the kidneys, as well as the liver, nervous system, spleen, and general physiological chemistry. A good deal depends on the kidneys: if they are sound the uric acid is readily eliminated; if not, if there be renal inadequacy, then more of the *materies morbi* circulates widely, and so induces the arthritic and other symptoms of gout and rheumatism. It is easy to picture the action of the poison in the blood on the *locus minoris resistentiæ* of various individuals, or the same individual at different times, with the production of gout at the heart, at the toe, at the stomach, and so forth. The arguments in support of Dr. Latham's views afforded by appropriate treatment of rheumatism, gout, and diabetes, by salicylic and benzoic acids and colchicum, are not the least interesting part of the Croonian Lectures.—*Lancet*, May 15, 1886.

THE DETECTION OF ALBUMEN IN URINE.

The clinical importance of albuminuria, and the necessity that exists for its early detection as a guide to the treatment of the morbid conditions which give rise to it, have led to the introduction of numerous methods directed to a demonstration of its presence. For a long time the main reliance of physicians in this connection was placed on nitric acid, but of late years other tests than this have been suggested by different observers, until at length quite a goodly number of reagents have been included under the head of albumen detectors. The Clinical Society of London, appreciating the desirability of arriving at some sort of authoritative decision on the comparative value of the methods now in use, recently appointed a committee to examine into and report upon the subject; and on Friday last Dr. W. M. ORD communicated the results of this committee's labors, which were devoted to consideration of the eight following methods of performing the examination of fluids for albumen, viz.: 1. Dr. Oliver's test papers; 2. Dr. Pavy's pellets of citric acid and ferrocyanide of potassium; 3. Dr. Johnson's picric acid test; 4. Sir William Roberts's acid brine test; 5. The picric acid brine test, being a solution of picric acid saturated with common salt; 6. The potassio-mercuric iodide in solution with citric acid; 7. Nitric acid; 8. Acetic acid and heat.

The test papers invented by Dr. Oliver were all carefully experimented with, and in

respect to those saturated with the potassio-mercuric iodide, the committee report that the most satisfactory results were obtained as regards refinement and delicacy of reaction, they being superior in these respects to nitric acid in whatever manner the latter may be employed. Next in order of comparative value they place the ferrocyanide papers; the tungstate papers third; and of the picric acid papers they speak unfavorably, urging that the amount of the acid required for the purposes of detecting albumen is greater than can be supplied by the papers, unless they be used in inconvenient bulk. Even the potassio-mercuric iodide papers, however, possess the drawback that when employed in the cold they require to be supplemented with citric acid, the same objection also applying to the ferrocyanide slips. But it is pointed out that excess of soluble urates in the examined urine gives rise to a precipitate in the presence of citric acid alone, and this fact necessarily introduces a fallacy which it is important to bear in mind in all cases where the papers in question are used for the testing of cold urine; dilution of the excretion is recommended as a means of avoiding the error, as well as the employment of sufficient citric acid to insure a distinctly acid reaction of the fluid. Of the potassio-mercuric iodide it is added, that it appears to precipitate all albuminous bodies, while the ferrocyanide test does not react with artificial peptones. At a later stage of the report, unqualified praise is given to the mode of testing by *solution* of potassio-mercuric iodide, with addition of acetic acid. This is described as the most delicate of all the plans considered, possessing superiority over Dr. Oliver's papers, and giving, especially when applied after Heller's method, reactions of the utmost possible refinement. Dr. Pavy's ferrocyanide of potassium and citric acid pellets are also favorably spoken of, but the same precautions must be observed with them as have been already mentioned, to guard against fallacies due to the precipitation of soluble urates by the citric acid. Further, care must be taken that a temperature exceeding blood-heat is not reached by the urine during their employment: otherwise the ferrocyanide undergoes decomposition.

The picric acid solution suggested by Dr. Johnson is described as being, when used with the addition of citric or acetic acid, or when excess of the picric acid itself is employed, second only to the solution of potassio-mercuric iodide in its reactions. Owing

to the great diffusibility of the reagent, the committee consider its employment after Heller's method inapplicable,—i.e., by floating it upon the urine to be tested; and to overcome the difficulty in this connection they devised a special method of experimenting, which is fully described in the report; and they recommend the addition of strong brine to the picric acid to increase its specific gravity in this connection. They further point out that the urine of persons who are taking quinine yields a precipitate with the acid; it disappears on boiling, but is again thrown down in the cold as a crystalline powder, which, with chlorine water, gives the characteristic reaction of quinine. Uric acid also is precipitated by picric acid, but the effect of heat in dissolving the cloud sufficiently insures its recognition.

The old nitric acid test is, after all, still regarded as affording results the most trustworthy, and as being liable to fewer fallacies than any other of the methods considered. The difficulty surrounding its use is one mainly of convenience, the want of portability being the one objection to its general acceptance in practice. On this ground, and this alone, can other methods claim superiority. The committee also mention acetic acid in terms of high praise, especially as a means of detecting small quantities of albumen, and speak of it as being, in common with nitric acid, particularly free from fallacies such as necessitate especial caution in the use of other tests in the list; but while thus describing the accuracy of these older modes of examination, they add that they have found an apparently albuminous precipitate formed in some urines after treatment with potassio-mercuric iodide, which yielded no reaction with nitric acid.

All the methods included in the report receive commendation on special grounds, each being considered to possess advantages peculiar to itself, under certain circumstances; and the committee declare their conviction that any one who constantly employs either of the tests mentioned will be readily able to decide on the presence or absence of albumen with sufficient accuracy for all clinical purposes. For distinguishing the various forms of proteids they regard the possession of several tests as invaluable, while the additional advantage pertains to Dr. Johnson's picric acid test that it affords evidence of the presence of sugar also, when employed with the addition of caustic potash and boiling. We cannot but think this report will prove a most valuable contribution to the study of clinical methods,

and do much to stimulate renewed inquiry in a direction that will lead to ultimate practical benefit.—*Medical Press*, June 2, 1886.

TESTS FOR LANOLIN.

The following tests for lanolin are recommended by Messrs. Jaffé and Darmstaedter (*Schweiz. Wochenschrift*, p. 88, 1886):

1. Red litmus-paper should not turn blue placed over a flask in which two or three grains of lanolin are heated with 10 c.c. of a thirty per cent. solution of caustic soda. Lanolin should be free from ammonia.
2. Pure lanolin, heated in a capsule with five times its weight of distilled water, when melted, floats to the surface, and remains clear on cooling, whereas impure lanolin becomes spongy.
3. No glycerin should be present in the water in which lanolin has been treated upon being evaporated.
4. When kneaded with water, with exclusion of air, it should take up more than its own weight of water without becoming soapy to the touch, and when triturated in a mortar it should not slip off the pestle or spatula.—*Western Druggist*, June, 1886.

DETECTION OF ALUM IN BREAD.

The detection of alum in bread is accomplished as follows: A piece of gelatin (free from alum) is immersed in a cold infusion of the suspected bread for twenty-four hours. The gelatin, upon being washed off with distilled water to which has been added a little of a ten per cent. solution of logwood tincture and ammonium carbonate, should not show a blue coloration if the bread is free from alum.—*Western Druggist*, June, 1886.

THE HAIR-ROOTS AS INDICATORS OF BODILY OR MENTAL DISEASE.

DR. J. POHL-PINCUS, of Berlin, has recently, in a *brochure* entitled "Polarized Light as a means of Recognizing Irritable Conditions of the Nerves of the Scalp," announced that by an examination of the hair-roots by polarized light peculiar changes may be observed whenever the patient suffers from physical irritation or mental excitement. This statement is the result of investigations which have now been going on for twenty-five years, and the later observations in the course of the research have uniformly confirmed those made earlier.

The hair-bulbs are divided into three groups, as follows: Group A: If, in healthy conditions of the body and mind, the hairs that fall out daily are examined microscopically by polarized light, the enlarged bulbous end of the root will show a white contour, and a yellowish or brownish-red centre. Group B: In all irritable conditions of moderate grade, all painful conditions of any organ, also in emotional disturbances of moderate grade, without any apparent bodily disease, the bulbous end of the hair-root increases in length and breadth (in proportion to the irritation), the central part appears under polarized light of a violet, blue, or bluish-green color, separated from the white contour by bands of yellow and red. Group C: In higher grades of bodily disease or mental disturbance, the bulb becomes still larger, and the bluish centre changes to green, yellow, or orange. A few hairs of the B and C types are found in normal conditions, especially in those more advanced in life. Dr. Pincus gives thirty-one cases showing the effects of painful disease, but more especially of depressing emotions, upon the appearance of the hair-root. The conclusion to be derived from these researches is that bodily disease or mental excitement causes circulatory disturbances, and in consequence a change in the normal nutrition and pigmentation of the hair. This is only in accordance with previous observation, and the chief merit of Dr. Pincus's plan lies in his obtaining a means by which very slight and temporary changes in tissue-growth can be detected and approximately measured.—*Lancet*, May 1, 1886.

A SUBSTITUTE FOR COCA-LEAVES.

According to the *Chemist and Druggist* (May 29, 1886) dodonæa-leaves have been sent into England as a substitute for coca-leaves, the consignor being under the belief that they possess similar properties. Though their conformation presents a remote resemblance to that of the coca-leaf, the varnished surface and the liquorice taste should remove any doubt on this point, and, moreover, the absence of the lateral mark along each side of the midrib, which is so characteristic of coca, together with the mucronate apex, will not mislead the close observer to suppose that they are coca-leaves. Moreover, the leaves, though containing abundance of extractive and mucilaginous matter and a little tannin, do not contain an alkaloid; they probably contain a glucoside, but the quantity of the leaves under examination was too small to

afford satisfactory proof of the indications in this direction.

A correspondent further states that there are three dodonæa plants growing in the Edinburgh Botanic Gardens. One of these came from the tropics, and the others are supposed to have come from New Zealand. The fresh specimen of these shows a longer and narrower leaf than those which are the subject of this note.

POISONING BY CHLOROFORM.

The symptoms and post-mortem appearances of poisoning by liquid chloroform were—and apparently still are—but little known, and the evidence given on the subject during the past week has been marked by much unavoidable hesitation and uncertainty. Not only did the want of exact knowledge on the one hand hamper the scientific witnesses, especially those who, in courts of justice, were not altogether at home, but the information that is possessed as to the toxic effects of the drug only goes to show how unreliable a poison it is, and how variable are its effects. One result, at any rate, of the recent trial will have been to call attention to the facility with which drugs can be obtained, the use of which under any circumstances must be illegitimate on the part of any other than a medical man. The utter inadequacy of the law on the subject of the sale of poisons is unfortunately a matter of public notoriety, but the ease with which such potent agents as chloroform are shown to be procurable is nevertheless rather startling. Now that the uses and mode of employment of this drug have become public property, it may not unreasonably be anticipated that the future will furnish further details to supply the present *lapsus* in medico-legal treatises. The difficulty with which its employment could be brought home to the culprit if inhalation only were resorted to cannot but enhance its reputation; and unless special precautions be taken, there may be quite a "run" on this particular lethal weapon, as well for offensive as for defensive purposes. Protection can only really be afforded by an absolute prohibition of the sale of such drugs by druggists, under a penal clause, except to medical men or their recognized representatives. To be effectual the onus must be made to rest to a large extent on the vendor, even where his poverty and not his will consents. At present a few "informal formalities" suffice to cover his responsibility, and he is at liberty to go cheerfully and give his evidence

in a case which would in all probability never have presented itself if the law did not almost connive at his carelessness. There are few quite unmixed evils, and it may be that the late *cause célèbre*, besides affording gratuitous and poignant amusement to a crowd of "women and young girls," may serve to point a moral as well as to adorn a tale, by stimulating the progress of a much-needed reform in the laws anent the sale of poisons.—*Medical Press*, April 21, 1886.

EQUIVALENT WEIGHTS.

The following rather good story is related in the *Petit Moniteur de Médecine* for April, 1886:

A doctor, practising in the country, brought a package of powder in bulk to a woman, of which she was to give to her husband 75 grains daily. As she said that she had a pair of scales, but no weights, the physician told her that a one-franc piece (a quarter of a dollar) weighed about the amount which he wished to have given, and that she might therefore give him daily the weight of a franc piece of the powder. Two days afterwards the doctor, to his great astonishment, found his patient dead. The explanation of this mystery was, however, readily reached. It turned out that the woman had no silver piece, and that she thought the equivalent in money, no matter how arranged, would be the proper dose; she therefore, instead of putting the silver coin in the balance, put in twenty-five copper pennies. The result was evident.

PHYSIOLOGICAL EFFECTS OF MASSAGE.

DR. F. GOPADZE has published a series of observations undertaken with a view to determine the effect of massage on the transformation of the nitrogenous principles of food. He has investigated the history of the subject, and finds traces of it in a Chinese work 3000 B.C. Dr. Gopadze finds that, though there has been a general tendency among authors to assume that massage increases the assimilative power, no exact observations on the subject have hitherto been published. He therefore obtained the co-operation of four medical students, who for three consecutive weeks became inmates of Professor Manassein's clinic, and lived on certain articles of food,—bread, milk, soup, veal, and roast beef,—the quantities ingested being accurately noted. The nitrogen in all the samples of

food, and in the fæces and urine excreted, was determined by the Kjeldahl-Borodin process. Massage was practised for from twenty to twenty-five minutes once a day two or three hours after food. The operations were commenced by *effleurage*, beginning from the extremities and working towards the centre. This was followed by *massage à friction*, *pétrissage*, *tapotement*, a second *effleurage* of each part concluding the whole. The temperature was subsequently taken, and in some cases sphygmographic tracings. In all four cases the appetite was decidedly increased, not only during the week in which massage had been practised, but after it had been stopped; thus, one of the subjects took an average daily quantity of 24.95 grammes of nitrogen during the first week, 30.97 during the second or week of massage, and 29.57 during the third week. Similarly the amount of nitrogenous transformation was augmented during the continuance of massage in all four cases. The augmentation persisted in two of the cases, but in the other two the transformation was less during the third than during the first week. In Case 1 the nitrogenous transformation was increased three per cent. during the second week, and one per cent. during the third. In Case 2 it was increased one per cent. during the second week, but diminished eleven per cent. during the third. In Case 3 it was increased three per cent. during the second week, but diminished ten per cent. during the third. In Case 4 it was increased four per cent. in the second week, and three per cent. in the third. The quantity of nitrogen assimilated increased in all four cases, independently of the amount of food ingested. During massage two of the subjects gained slightly in weight, the other two losing weight, but during the week following the one in which massage was practised all four gained. The axillary temperature decreased for about half an hour after the operation to an extent varying from 0.1° to 0.5° C., after which it began to rise, attaining its original figure, or from 0.1° to 0.3° below it, about an hour after the end of the *séance*. The respirations became more frequent, and were of a deeper character. The effect on the pulse varied with the character of the massage. When this was carried on lightly, the pulse became more frequent; but when the manipulation was more forcible, the pulse became slower. The effects in both cases persisted for an hour or more after the termination of the operation. In conclusion, the author suggests that massage should prove useful in chronic gastro-intestinal catarrh, in

chronic constipation due to an atonic condition of the intestines, also in various cases where there is a lack of tone in the abdominal muscles. He also thinks that the practice of massage should be a subject of instruction not only in the Military Medical Academy of St. Petersburg, but in all the medical faculties of the empire and in the institutions for training "feldshers,"—a semi-educated class of men who act as hospital sergeants, and after retiring from the army are put in charge of village communities where there is no medical man.—*Lancet*, May 22, 1886.

DIGESTIVE FERMENTS.

An interesting contribution on the value of extract of malt in wasting diseases, by Dr. MURRELL, has recently appeared. The value of this preparation appears to be satisfactorily established, but he attaches a very great importance to testing the specimens of extract of malt before employing them. Otherwise disappointment may follow the administration of an extract which has not been prepared by suitable means, or with proper care, and which, in consequence, is more or less wanting in the active constituents to which alone extracts of malt owe their efficacy. Dr. Murrell calls attention to the fact that it is desirable to be careful to make all experiments with the same sort of starch, for he found in the course of his observations that starches from different sources varied widely in their susceptibility to the action of malt ferments; hence, unless due care be taken to secure a uniform quality in the starch experimented with, erroneous and unreliable results may be obtained. The best variety for comparative tests, according to Dr. Murrell, is pure *Maranta arrowroot*, ten grammes of which should be weighed out and mixed with a little cold water. This should then be stirred in ten ounces of boiling water over a gas-burner, and when the mixing is complete, the whole should be cooled down to 40° C., at which temperature it should be maintained during the experiments. This latter point must be rigidly attended to, as a difference of one or two degrees materially influences the result. Then again, in testing for the presence of starch with iodine the solution in the test-tube must be cold, as otherwise the characteristic blue reaction will not be produced. Out of eleven specimens of extract of malt so examined, only two were found to transform all the starch within thirty minutes, while several were absolutely destitute of any diastatic

action whatever. Good preparations do not deteriorate on being kept, but the inferior article is apt to undergo fermentative changes. With this simple and easy method of estimating the value of any given extract of malt, the practitioner is enabled to prescribe it with confidence and the discredit which would result to this class of preparation from the employment of inert extracts may be avoided.—*Medical Press*, April 21, 1886.

MAGNESIUM SULPHATE IN RHEUMATISM.

Dr. S. B. CHASE calls attention in the *Iowa State Reporter*, April, 1886, to the fact that magnesium sulphate will frequently produce great relief in the treatment of muscular rheumatism. He recommends its being given in doses of 5 to 10 grains three times a day in cold water immediately after eating. In his own case it succeeded in producing an entire relief of pain, after various other remedies had failed.

A SIMPLE REMEDY FOR CHRONIC DIARRHŒA.

Dr. T. C. SMITH, writing in the *Med. and Surg. Reporter*, June 12, 1886, mentions the fact of his having cured a case of chronic diarrhœa, which had lasted for nearly forty years, by the administration of a saturated solution of salt and cider vinegar, a drachm being taken three or four times a day. He also states that since the first instance where he recommended this homely remedy without supposing that it would actually do any good, he has employed it several times in more or less severe cases of chronic diarrhœa, in which it produced great improvement, and, in some cases, cure. Where relapses followed the suspension of the remedy, its renewed administration was again followed by improvement.

DIALYZING DIAPHRAGMS.

A practical subject of much importance in the chemical laboratory is that of the relative permeability of various diaphragms, and the paper by HERR ZOTT in the *Annalen der Phys. und Chem.* will be therefore appreciated. Goldbeater's skin carries off the most useful, homogeneous, and water-tight material as a dialyzer, and is twice as effectual under the same conditions as parchment-paper, which, on the authority of Graham, has hitherto been regarded as the best substance. When the solutions to be dialyzed are of such a nature

as to attack organic membranes, ordinary clay cells must be still employed, though they are sixty times less effectual than goldbeater's skin. It appears also that the rapidity of diffusion is increased by the complete exhaustion of the air contained within the pores of the dialyzer; the rapidity is also dependent more on the increase of volume of the solution than on augmentation of the mass dissolved. After a preliminary exhaustion endosmosis takes place, even in the case of slowly diffusible substances such as colloids. The term "colloid" and "crystalloid" are purely relative; two or more substances present in a solution are more rapidly and completely separated the greater the difference of their diffusion velocity. Separation by dialysis is more rapid the more often the liquid in the outer vessel is removed.—*Lancet*, May 22, 1886.

SAL ALEMBROTH—SIR JOSEPH LISTER'S LATEST ANTISEPTIC.

It may be news to a great many to learn that LISTER has discarded the use of the spray almost entirely, the only cases he has used it in during the past fifteen months being operations involving the peritoneum. After careful examination and study, he believes that the germicide properties in a solution of $\frac{1}{40}$ carbolic, thrown by the spray into the air three or four feet, to be *nil*, or nearly so, and the sole benefit derived was due to the irrigation and absolute cleanliness induced. Carbolic acid was superseded by perchloride of mercury; this, when used for dressing, was, from its forming an insoluble albuminate of mercury, irritating, and thus an unsatisfactory dressing. He now uses sal alembroth exclusively in his wards for dressings, and it has so far given very fine results. It is a double mercurial salt formed by the sublimation of a mixture of perchloride of mercury and chloride of ammonium, exceedingly soluble. The salt was known to the alchemists; it has not been used in medicine in modern times. Lister prepares all his dressing now with a $\frac{1}{100}$ solution of this, gauze cotton-wool, lint, bandages, draw-sheets, and where the wound is covered by the shirt, it is rendered septic by dipping it in the solution and drying before the fire. To make any of these dressings, all that is necessary is to soak them in this solution and dry. It not being volatile does not require to be kept sealed in tin cases. He also colors these dressings with aniline blue $\frac{1}{1000}$; the benefit to be derived from this is that wherever an alkaline dis-

charge comes in contact with the dressing, the blue is removed and turned reddish, enabling you at once to see where the discharge has been, if the quantity was ever so small, and had dried up before the dressing was removed. There is one precaution in using this dressing, and that is this,—the dressing being dry and frequently handled, might have some septic matter from bedclothes, hands, etc., so he always dips it in $\frac{1}{1000}$ perchloride just before applying it. He is making a sal alembroth protective, which will be surcharged with the antiseptic, so that as a discharge comes through a dressing, it will come in contact with this protective, and can be kept aseptic.—*Pharmaceutical Record*, May 15, 1886.

HYDRASTIN.

DR. A. T. SLAVATINSKI, who has published as a graduation dissertation an account of his researches on the pharmacological action of hydrastin, which he gave to a number of pregnant bitches and rabbits, as well as to other animals, finds that when introduced into the blood in doses of not less than a hundred-thousandth of the body-weight, or one centigramme per kilogramme of the body-weight, it acts as a stimulant to the spinal cord and medulla oblongata. In medium doses it paralyzes the vaso-motor centres, thus decreasing the blood-pressure. It acts on the heart first as a stimulant, and afterwards as a depressant of the motor ganglia. No effect seems to be produced on the peripheral branches of the pneumogastric. The augmentation of the cardiac contractions begins from the spinal cord. At first the secretory and convulsive centres are stimulated and afterwards paralyzed. Hydrastin, in doses of from 0.01 to 0.03 grm. per kilogramme of body-weight, was found to act as an ecbolic in pregnancy, and to produce contraction in the fibres of the non-pregnant uterus. At a certain period of pregnancy, which for the human subject is about seven months, the drug in the same small doses (0.01 to 0.03 per kilogramme), if repeated a few times, appears to cause a miscarriage. The author had an opportunity of trying the ecbolic effect of hydrastin on a woman who had a contracted pelvis and in whom it was desirable to bring on the labor somewhat before its proper time. On March 3, which was the commencement of the ninth month of pregnancy, a gramme dose of hydrochlorate of hydrastin was administered hypodermically morning and evening. These injections were repeated the

following day. In the evening the patient noticed that the movements of the foetus were particularly strong. On the forenoon of March 5 a gramme and a half was injected, and subsequently two strong movements were felt. The same evening two grammes were injected. On the forenoon of the 6th two grammes were given, and there followed during the day three strong movements. At night three grammes were injected. On the forenoon of the 7th three grammes were given, and one very violent and prolonged movement was experienced. Two grammes were given in the evening. No further injections were required, as signs of approaching labor manifested themselves. The child was born without complications, but it died the next day. Dr. Slavatski suggests that if further experiments show that hydrastin may be used without danger to the mother, it may well replace the use of instruments in cases where premature induction of labor is required. He considers that hydrastin and its salts are more reliable than other preparations of the root. With regard to the dose for therapeutic purposes, he puts the maximum daily quantity at 0.3 grm. when given hypodermically, but would give doses of 0.5 grm. internally.—*Lancet*, May 22, 1886.

MENTHOL IN URTICARIA AND PRURITUS.

Among the myriad of remedies for these troublesome affections we have no other which affords such complete and instantaneous relief as a solution of menthol. Not only is the itching relieved for the time, but a cure seems to be effected. In pruritus and in eczema, moistening the parts with menthol solution causes an immediate cessation of the pain. The solution should contain from two to ten grains of menthol to the ounce of water.—*Amer. Journ. of Pharmacy*, April, 1886.

TREATMENT OF ACUTE RHEUMATISM.

The last number of the *Russkaya Meditsina* contains a communication from Dr. L. GRINEVITSKI, of Rostoff-on-the-Don, who writes that for more than twenty years he has treated acute articular rheumatism with nitrate of potassium, two drachms being given daily in raspberry syrup, and a dose administered every two hours. Together with this internal medication he prescribes an ointment for use morning and evening of the following composition: Olei hyosc., 1 oz.; ung. hydrarg. cinerei, 2 dr.; ext. acon., 1 dr. He has tried all ordi-

nary remedies, and finds that on the whole this plan of treatment is more satisfactory than any other, being especially valuable in those cases where salicylates fail to give relief. Generally the disease is brought to an end in from one to two weeks, according to its severity and the time the treatment was commenced. When commenced at the onset of the attack, and before more than one joint was affected, the others were usually spared altogether.—*Lancet*, May 22, 1886.

ACTION OF POTASSIUM CHLORATE ON CHLORAL HYDRATE.

K. SEUBERT calls attention in the *Pharmaceutical Record*, May 15, 1886, to the fact that when 165 grammes of chloral hydrate and 37.43 grammes of potassium chlorate are finely powdered, and exposed to direct sunlight in a flask fitted with a reflux condenser, a reaction soon begins with a great rise of temperature, and the flask must be cooled by immersion in cold water. Chlorine, phosgene gas, carbonic anhydride, and chloroform are given off. In four days the reaction is complete, and a separation of crystals takes place, which may be increased by surrounding the flask with ice. The whole is then filtered, and washed with absolute alcohol. Water is added to the alcoholic solution, which then yields on evaporation very pure hydrogen potassium trichloracetate. A small quantity of perchlorethane is also formed in the reaction.

WRIGHTINE AND CONESSINE.

Wrightine is an alkaloid which is obtained from the seeds of the East Indian apocynaea wrighta dysenterica by digestion of the alcoholic extract with dilute hydrochloric acid, and precipitating by ammonia or sodium carbonate. This alkaloid was first isolated in 1864 by Stenhouse, and has recently been described by Haines and Wamecke as the first natural alkaloid which was free from oxygen. Haines claims priority of discovery of this alkaloid, to which he states that he gave the name of conessine.

The alkaloid forms a voluminous, friable mass of colorless crystals, melting by prolonged heat at 60° or 70°, and forming good crystallizable salts with acids. In the pure state, heated carefully in a retort, they undergo sublimation. The salts are with difficulty soluble in water, readily soluble in ether, alcohol, chloroform, petroleum ether, benzol, amyl alcohol, and bisulphide of carbon.

— THE — Therapeutic Gazette.

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Original Communications.

THE PRIMORDIAL ALIMENTARY PRINCIPLES.*

By PROFESSOR DUJARDIN-BEAUMETZ, PARIS, FRANCE.

THE subject of alimentary regimen, which I intend to consider to-day, is one of the most important connected with hygienic therapeutics and also one of the most difficult. I shall, then, ask your careful attention and your indulgence in the lengthy and perhaps somewhat dry exposition into which I am about to enter.

* A lecture on Hygienic Therapeutics delivered in Cochin Hospital. Printed from advance sheets.

To give order and method to this vast chapter of hygienic therapeutics, I propose in successive lectures to take up the following points : first the primordial principles of foods, then the complete foods, then complex foods, and lastly beverages. When once we have reviewed these topics, we will define the bases of the normal alimentary regimen, and then study the consequences of an insufficient, excessive, or exclusive dietary regimen, and the application of dietetics to the treatment of diseases.

A man loses every day a certain quantity of nitrogen, of water, and of salts ; these daily losses, which are the result of the different acts of nutrition, must be duly compensated by a sufficient diet, otherwise emaciation, de-

bility, and death ensue. The quantity of nitrogen and of carbon has been carefully estimated, and we know that in the twenty-four hours a man loses by the urine 15.5 grammes of nitrogen, and by the fæcal matters, mucus, and cutaneous exhalations, 5.5 grammes, which represent a total of 20 grammes of nitrogen. As for the carbon, we have the high proportion of 310 grammes, of which 250 are eliminated by the respiration, 45 by the kidneys, and 15 by the exhalations, the excrements, and the mucus. The quantity of water which is removed by the respiration, the perspiration, and the urine varies between 2000 and 3000 grammes per day. Lastly, 30 grammes of saline matters daily are also necessary for nutrition.

THE PRIMORDIAL ALIMENTARY PRINCIPLES.

Organic principles.	Azotized principles.	Albuminoid, or proteinaceous principles.	Fibrin. Albumen. Glutin. Casein. Legumin. Chrondrine. Osseine. Gelatin. Ichthyocol. Cartilage, etc. Theobromine. Caffeine. Theine. Matheine, etc.
		Gelatinous, or non-proteinaceous substances.	
	Non-azotized principles.	Alkaloids.	
Inorganic principles.	Salts.	Hydrates of carbon.	Starch. Sugar. Gum. Butter. Fat. Oil.
		Neutral fats.	
	Water.	Chlorides. Carbonates. Phosphates. Lactates.	Sodium. Lime. Potassium.

We give the name of food to all substances, of whatever origin, which, when introduced into the organism, may serve for nutrition; alimentation is the methodical and rational association of these diverse aliments.

When you take a general survey of the primordial alimentary principles of all the different kinds of food, you find that they may all be divided into two great classes,—the organic and inorganic principles. These two great classes are each subdivided into two groups,—the organic into azotized and non-azotized principles, the inorganic into saline principles and water. Let us examine each of these groups.

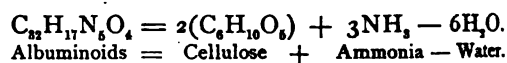
The azotized principles comprehend three classes,—the albuminoid substances, properly so called; the gelatinous or non-proteinaceous substances; in a third class are ranged certain alkaloids of vegetal or animal origin

which we find among our aliments. The organic non-azotized principles are subdivided into two groups,—the neutral fats and the hydrates of carbon.

The above table gives you a bird's-eye view of these different primordial alimentary principles.

Let us now pass in review each of these subdivisions.

The albuminoid or proteinaceous substances constitute the basis of azotized foods. These are fibrin, albumen, casein, legumin, etc. They all correspond to a general formula whose atomic notation is not yet fixed, but which, in accordance with the recent labors of Sterry Hunt, Schutzenberger, and Paul Thenard, seems to be that of cellulose, plus ammonia, minus water, as may be represented in the following formula:



Their centesimal composition is represented by the following figures:

Carbon.....	53.5
Hydrogen	7.0
Nitrogen.....	15.5
Oxygen.....	22.4
Sulphur.....	1.6

You know that Müllder considered all these bodies as having for basis a special principle, to which he gave the name of *protein*; hence the designation *proteinaceous*, or *protein* compounds, which chemists have applied to all these substances. To-day this view has been abandoned, and the prevalent opinion, since the brilliant researches of Armand Gautier, has been that the albuminoids, some of which, such as xanthine, may be synthetically produced, all have for their basis, or, if you prefer the term, their *skeleton*, certain hydrocyanic compounds, and that the economy excretes as useless or dangerous various toxic combinations under the form of leucomaines and ptomaines; but there is far from being universal agreement on this subject, and, despite the more recent researches of Hoppe-Seyler, of Bechamps, of Schutzenberger, we are still ignorant of the real composition of albuminoid substances.

All these albuminoid principles, whatever may be their origin, whether we have to do with legumin or casein, or with myosin, undergo a special action on the part of the gastric juice, which, by reason of the ferment pepsin which it contains, transforms them, first into syntonin, then into peptone; each

of these principles, moreover, having, as Heninger has shown, a special peptone, so that we find described a fibrin peptone, a casein peptone, etc.

I need not here trace for you the history of these peptones. You all know the great characteristics which separate albuminoids from peptones,—while the former are coagulable by heat and strong acids, the latter are not. The peptones, moreover, present a special reaction with cupro-potassic and cupro-sodic liquors,—they turn them to a reddish violet color. At the same time these peptones keep the characteristic reaction of albuminoid substances,—that is to say, under the influence of Millon's reagent, the nitrous nitrate of mercury, they take on the characteristic orange-red color.

Meissner, who has especially studied this question of the peptones, has divided them, you know, into para-peptones, meta-peptones, and dys-peptones. He has even described the peptones *a*, *b*, *c*.

These are questions of purely chemical order, concerning which physiologists are far from being generally agreed.

This rôle of peptonization is not especially reserved for the gastric juice. The pancreas completes the work of the stomach, with this difference, nevertheless, that while the gastric peptonization always takes place in an acid medium (and we know to-day, thanks to the researches of Richet, that this acid is probably hydrochloric combined with leucin under the form of hydrochlorate of leucin), the pancreatic peptonization, on the contrary, is effected in an alkaline medium.

But this is not all. Peptonization has been known to take place in the vegetal kingdom, and Darwin has given us the description of certain carnivorous plants which peptonize albuminoid substances in the same way as the stomach and pancreas. Wurtz and Bouchut have shown us that the juice of certain plants, like that of "*Carica papaya*," of the fig-tree, etc., possesses the same properties.

As for the precise nature of this phenomenon of peptonization, whether effected by the stomach, the pancreas, or by vegetal juices, we are entirely ignorant. At the same time, there is reason to believe (with Wurtz, Hoppe-Seyler, and Schutzenberger) that peptonization consists especially in the hydration of albuminoid substances.

What rôle do these albuminoid substances play in nutrition? Liebig thought that they were chiefly destined for the reparation of our tissues, and in contradistinction to the

respiratory aliments, which are constituted by the fats and hydrates of carbon, the name of plastic foods was given by him to these albuminoid principles.

Gautier has well shown what there is of purely theoretical in this view, and, according to him, these albuminoids have a much larger and wider rôle in the economy. Some of them may pass directly into the organism, and combine with hæmoglobin to form the blood-globules; others undergo hydration to constitute leucin and tyrosin; the peptones, finally, in contact with oxygen, undergo combustion into carbonic acid, and it may be creatine, xanthine and uric acid, and, if the action of the oxygen is continued, we have the formation of water, lactic acid, and especially urea.

As you see, gentlemen, this old notion of plastic foods and respiratory foods ought to be abandoned, and it seems to be a fact that the albuminoid substances furnish not only elements for the reparation of the tissues but also for respiration.

Such was the old, I might say, classical theory of the transformation of albuminoids. To-day Liebig's theory seems to be abandoned, and it has given place to the cellular theory, which is supported by Hoppe-Seyler, Moritz Traube, Pettenkofer, Voit, and Pflüger. From the time of Lavoisier down to Liebig it was held that oxygen, entering the blood by the lungs, then conveyed by the globules to the recesses of the tissues, effected a combustion with the albuminoid principles, the products of which were then eliminated by the different emunctories of the economy, under the form of urea, if the combustion were complete, and of uric acid if it were incomplete; here oxygen played the principal part.

The new theory assigns to oxygen only a secondary rôle. It is the living cell which modifies these albuminoid principles, acting in the same way as the ferments; and, just as we see the yeast-plant transform sugar into alcohol, the *micrococcus of urea* transform urea into ammonia, the *bacillus subtilis* determine the butyric fermentation, so also the living cell disassociates the different albumens, eliminating some, fixing others, and transforming one kind of albumen, such as the albumen of egg, into the albumen of blood or serine. Then, when once this disassociation is effected, according to the wants of the economy, the oxygen accomplishes its office and burns the disassociated elements.

There have been two hypotheses respecting the cellular theories. According to the one,

which is held by Pflüger, Valentin, and Hoppe-Seyler, this disassociation of albuminoid bodies pertains only to the fixed albumen,—that is, to the serine. Voit, on the other hand, maintains that this disassociation performed by the living cell pertains as well to the absorbed and ingested albumen as to the fixed albumen. Lecorché, who has set forth in a very clear manner all these theories in his remarkable treatise on Gout, adopts Voit's theory.

This cellular theory of nutrition appears confirmed by the recent researches of Pasteur and Gautier. Conceding to the living cell the action of figured ferments, it likens nutrition to a fermentation taking place according to the laws established by Pasteur. It also sets forth in clear light the rôle of the living cell, to which Gautier attributes the property of separating from the albuminoid matters the leucomaines which result from their disassociation. I call your attention to these new facts in order that you may see what a change has taken place during the past few years in our ideas respecting nutrition.

But what it is important to know, and what Pettenkofer has set forth in clear light, is that these albuminoids, or rather the waste products of their combustion, pass out of the system in the urine. Hence it is that when we increase the quantity ingested of these azotized substances, we proportionally increase the quantity of nitrogen in the urine. When we deprive the economy of these azotized principles by restraining their ingestion, the organism itself furnishes the nitrogenized waste elements. The following table from Pettenkofer well shows this :

Alimentation.	Nitrogen of food in grammes.	Inspired oxygen.	N. of urine and excrements.	C. in water re- moved by lungs.
Azotized regimen. { First day.....	42.61	850	28.71	273.6
{ Second day.....	42.59	876	36.14	283.1
Mixed regimen. { Rest	19.48	831.6	19.47	253.1
{ Work	19.4	980	19.28	329.1
Non-azotized regimen.....	1.29	808	13.43	228
Fasting. { Rest	0	766.25	12.39	195.4
{ Work	0	807.18	12.36	323.9

It is natural that the idea should have occurred of utilizing peptones in therapeutics, and Sanders was one of the first to render such application practicable. At the time of the International Congress of Medicine, which was held at Amsterdam, I was enabled to observe the manufacture of these peptones, and when I returned to Paris I asked Catillon to undertake the fabrication of similar peptones.

The first attempts were not successful, but since then, as you are well aware, the processes of manufacture have been improved and perfected, and to-day peptones of excel-

lent quality are produced here on a large scale.

The experiments of Haly, of Plotz, and those still more recent of Catillon, have satisfactorily proved that these peptones may suffice for alimentation. For a man, in order to sustain life, there is required a quantity of solid peptone equivalent to one gramme per kilogramme of the weight of the body. In the case of the dog, the quantity is still larger, amounting to three grammes per kilogramme. To this daily ration must of course be added hydrocarbons, such as fat and bread.

These commercial peptones have different properties, according to their mode of fabrication. Some are acid, some are neutral, some are liquid, others are solid. Even their reactions are different, showing how complex is this question of the peptones. In any event, whatever may be the commercial brand which you adopt, it seems to me important to recommend the dry in preference to the liquid peptones.

These peptones have a taste which resembles that of glue, and this taste is often so marked as to render the peptones repulsive to many patients. Peptones more agreeable to the taste, such as those of German origin, have been put in the market; but there is reason to fear that gelatin in considerable proportion enters into their composition. When you give these peptones, whether dry, liquid, or gelatinous, you will do well to dissolve them in a little broth. This is not, however, at present a popular mode of administration. I shall endeavor to show you that

the best stimulant of the peptic secretion of the stomach is meat, and that the peptones, far from favoring the secretion of gastric juice and the stomachal digestion, even retard it.

Hence it is that these preparations are far from fulfilling all the glowing promises which you will see held forth in the various advertising sheets commending their use. On the other hand, they render great service in rectal alimentation.

Since the year 1879 I have in fact shown that the large intestine, incapable of itself of

modifying albuminoid substances, fulfils only the function of absorption, and that, if it is desired to feed a patient by the rectum, peptonized enemata are necessary. These peptonized enemata are then the only injections of an alimentary kind worth employing, and I here repeat for you the formula which I have many times given: To a cup of milk add the four following substances: two or three dessertspoonfuls of liquid peptone, or, what is better, two or three teaspoonfuls of dry peptone, the yolk of one egg, five drops of laudanum, and a pinch (seven or eight grains) of bicarbonate of sodium, if the peptones of which you make use are acid, for, as you know, the contents of the large intestine are neutral or alkaline, but never acid.

The second group of azotized organic substances is constituted by the gelatin compounds. We have in this group osseine, connective tissue, tendons, cartilages, chondrine, etc. All these substances have this common character, that their prolonged boiling gives rise to gelatin. It has been recently maintained that these gelatin compounds are digested and absorbed by the stomach. What is certain is that the digestion of many of them is rapid, while, unfortunately, the greater number are composed of tendinous parts which are not absorbable, and which are found almost in their entirety in the stools.

The nutritive value of these gelatinous substances is extremely feeble, and in demonstration of this I need only remind you of the history, so familiar to you all, of gelatin broth, once so highly vaunted by Darcet. The furore for this kind of pabulum was carried to such an extent that manufactures of gelatin broth were established, and the one in connection with the Hospital St. Louis, during the years from 1829 to 1840, is said to have fed 94,542 persons.

The Commission of the Academy showed that this kind of broth possessed no nutritive property. Schiff has, however, shown that these gelatin soups favor the secretion of gastric juice, and that they belong to the class of peptoginuous aliments.

I have but little to say concerning the third group of azotized substances which is constituted by vegetal or animal alkaloids. You know that it comprehends theobromine, caffeine, and organic alkaloids, such as the leucomaines and ptomaines. I shall return to these first-mentioned alkaloids when I come to the subject of beverages, and I shall show you that caffeine and its derivatives must be considered as true foods. What I desire to

remind you of now is the curious resemblance which exists between certain products of the oxidation of albuminoid substances, such as xanthine and caffeine and theobromine, for it is proved that caffeine is only trimethyl xanthine, while theobromine is dimethyl xanthine.

I pass now to the study of the organic non-azotized substances; we have divided them, you remember, into two groups: the hydrates of carbon, which comprehend the starches, sugar, and gum, and the neutral fats, which are constituted by butter, animal fats, and the oils.

It is not until they have been transformed into glucose that the carbohydrates can penetrate the circulation. This transformation is effected at different points of the digestive tube. Since the time that Leuchs, in 1831, first pointed out the saccharifying action of saliva on starch, we know by the experience of Schwann, Sebastien, and Miahle that this transformation is due to a special ferment called ptyalin, or salivary diastase. The gastric juice does not prevent this saccharifying action, as Boutron and Frémy supposed, but it favors it, if we may trust to the experiments of Charles Richet.

In this transformation of amylaceous matters, the saliva, it must be remembered, plays only a secondary rôle, while the pancreatic juice is the principal agent in this transformation, as has been well shown by the researches of Bouchardat and Sandras. The pancreatic juice owes its saccharifying action to a particular ferment to which has been given the name of *amylapsin*, and this action is believed to be completed by the secretion of Brunner's glands, which, according to Claude Bernard, are salivary glands of the intestines.

Cane-sugar, in order to enter the circulation, must be inverted, and this transformation it owes to the intestinal juice. When converted into glucose, the hydrates of carbon pass into the blood, and the presence of this body in that liquid constitutes what we call physiological glycæmia. When the quantity of glucose furnished by the amylaceous and saccharine substances is too large, it is eliminated by the urine, and provokes alimentary glycosuria.

The greater part of the glucose undergoes the action of oxygen, and is rapidly burned into carbonic acid and water. Another part is intercepted by the liver to constitute hepatic glycogen, which in its turn furnishes to the economy the necessary glucose when the food no longer contains it.

May these hydrates of carbon supply fat to

the economy? This is a very important question, especially in its relation to the alimentary regimen of the corpulent. According to Liebig there is no doubt on the subject whatever; the carbo-hydrates do furnish fat directly. Soxhlet is of the same opinion, and the fact is patent that in the fattening of hogs the hydrates of carbon furnish the elements of the fat. Voit does not think that starch and sugar supply fat directly to the tissues, but he maintains that these hydrates of carbon, when they are administered along with albuminoid substances, favor the transformation of these substances into fat. It is in fact known, since the experiments of Hennenberg, that 100 grammes of albumen may thus furnish as much as 52 grammes of fat,—that is to say, more than one-half the weight of the albumen.

For my part, I believe in the possibility of the transformation of glucose into fat. Between the formula of glucose, $C_6H_{12}O_6$, and that of glycerin, $C_3H_8O_3$, there is a great similarity, and it may be affirmed that glycerin results from the breaking up of glucose with an excess of hydrogen. Do not forget that if the greater part of our cells are aërobiotic,—that is to say, living in contact with oxygen,—there is a certain number, as Gautier has well shown, which are anaërobiotic, and it is probable that it is to the latter that is due this special transformation of hydrates of carbon into fats. Whether we adopt the views of Liebig or those of Voit, the results are always the same,—namely, that the hydrates of carbon favor, whether directly or indirectly, the deposition of fat in the economy.

As for the neutral fats, it is in the state of emulsion, and probably after a partial decomposition, that they penetrate the organism by the lacteals. It is to the pancreas that we owe this transformation of fatty substances, which renders them assimilable. I cannot too much insist on the great importance of the pancreas in our digestive processes; and to one-sided dogmatists, who maintain that man should subject himself to a purely vegetable diet, and to those who defend an exclusively azotized regimen, the reply is that man is omnivorous. He is so by the disposition and conformation of his teeth, and especially by the multiple functions and large development of his pancreas, and there is no animal that in this respect bears so strong a resemblance to man as the hog.

The juice secreted by this gland contains, then, three ferments,—trypsin (Schiff), which peptonizes nitrogenous substances; amylap-

sin, which saccharifies amylaceous substances; and steapsin, which emulsifies and breaks up fatty substances.

Do the fats directly penetrate the economy, or do they undergo a special action which transforms them? Despite the experiments of Lebedeff, who, in giving to famished dogs linseed oil or mutton fat, found in the cellular tissue of these animals fatty bodies analogous to linseed oil or suet, we may affirm that every animal by a mechanism which is unknown to us elaborates a special fat. Mutton fat differs completely from that of beef, and the latter from that of the horse, both by their physical properties (taste, smell, etc.) and their chemical composition. But this is not all; in the same animal the composition of the fatty substance varies according to the parts of the economy from which it is taken. All these facts go to show that fatty substances when introduced into the economy are not deposited unchanged in the cellular tissue, but undergo various transformations, according to the individuals and according to the species.

The fats introduced in the food are burned in part, but as their destruction is slow, they are, according to Ebstein, much less concerned than sugars, starches, and gums in the formation of fat in the economy. Hence, as I shall tell you, when I come to speak of the diet of obesity, Ebstein does not exclude fats from his special anti-fat dietary regimen, and he considers these oleaginous substances as most useful agents in nutrition, especially when a man is obliged to undergo extreme hardship and fatigue. The two hundred and fifty grammes of fat pork which the Emperor of Germany provided every day for each of his soldiers during the campaign of 1870 was a sort of official recognition of the importance of fat in the daily dietary of men destined to undergo severe labors.

These results have been in part confirmed by some recent experiments of Debove and Flamart, who have shown that almost the entirety of the fat ingested is stored up in the economy. According to these experimenters, not only is fat an excellent food, but it lessens also the combustion of azotized elements, and in this respect it may be ranged among the waste-restraining foods.

I come now to the last division of the primordial alimentary principles, and shall take up the inorganic principles, which I have divided into salts and water.

As for the salts, Moleschott has shown that thirty grammes (or an English ounce) of

saline substances are necessary for the daily nutrition of man. The rôle of these salts is of considerable importance; it is owing to them and to the combinations which they form with other nutritive substances that the latter both find entrance into and exit from the economy; they are in fact indispensable factors of nutrition. Among these salts two are especially important,—the chlorides and the phosphates.

The influence of chloride of sodium in nutrition has been studied in reference to the food of animals (zootechnics), and it has been demanded if there be really an advantage in giving to domestic animals common salt? To-day all stock-breeders seem agreed that if the administration of salt enhances the nutritive functions in animals, it does not augment their weight. The increase of the combustions of the economy under the influence of chloride of sodium has, moreover, been demonstrated in man by Voit and Rabuteau. The latter, in adding ten grains of chloride of sodium to his daily rations, has seen the figure of urea rise several tenths of a degree.

To what is this augmentation of the combustions due? Is it the result of the increase of the salt (NaCl) contained in the normal state in the blood? To this question a negative answer must be given, for Lehmann has shown that whatever be the quantity of chloride of sodium administered, the proportion of this salt contained in the blood is always the same, and oscillates between 4.138 and 4.140 per 1000. But the chloride of sodium administered is found almost in its entirety in the urine, and it is probable that it is in stimulating the digestive functions, and especially in augmenting the acidity of the gastric juice, as has been shown by the experiments of Dorogon and others, that chloride of sodium benefits nutrition. At the same time, this augmentation of the acidity of the gastric juice was not observed in a patient who was the subject of a gastric fistula, and Herzen claims to have noticed a constant diminution in this acidity when from 10 to 30 grammes of salt were given with the food.

The question of the use of the phosphates is still more obscure than that of chloride of sodium. If we trust to exclusive views, we should have to consider these phosphates as possessing a considerable rôle in nutrition. Ingested in the state of phosphate of lime, they serve for the nutrition of our bones, according to Alphonse Milne-Edwards. As alkaline phosphates, they constitute one of the most important of the elements of the

liquor sanguinis, according to Joly; and, lastly, these phosphates are said to be useful in repairing the incessant losses of the nervous system.

Zootechnic experiments (experiments pertaining to the feeding of animals) have given little confirmation of these views; and, according to those made in France by Sauson and Chery-Lestage, and in Germany by Heiden, the chemical phosphates, both soluble and insoluble, when added to the daily rations, pass out in their entirety in the urine and fæces, the insoluble phosphates being found in the fæces, and have no action on the nutrition of the animals. It is not so, however, in respect to the phosphates which are contained in plants. The introduction of certain seeds rich in phosphates, such as beans and peas, and even the administration of the hulls of grains in the form of bran, favor the development of bones and the appearance of the teeth.

As for man, the question is far from being solved, and despite the fact that we find these salts in their entirety in the urine and fæces, it is by no means proved that the phosphates have no influence on the nutrition. But if you desire to introduce phosphates into the economy, it is not to the numerous pharmaceutical specialties that you should resort, but to the cereals, and to the parts of the grains which contain these salts in an assimilable form.

As for the chemical phosphates, soluble or insoluble, whatever favorable action on nutrition they may have is due to the part which they perform in promoting the intestinal functions, and to the acid elements which they introduce into the economy.

As for the alkaline bases of these salts,—phosphates, carbonates, lactates, etc.,—they are composed of lime, sodium, and potassium, and each of these bases predominates in a special region of the economy,—lime in the skeleton, sodium in the blood, and potassium in the muscles.

I come now to the part which water plays in nutrition. Our entire organism consists largely of this element, and water is eliminated by the urine, perspiration, and pulmonary exhalation. These daily losses must be made good; hence it is easy to understand that the absolute suppression of liquid in the daily dietary is one of the most cruel of inflictions, as persons testify who are condemned to die of starvation: it is the deprivation of water which causes the most intense suffering.

But physiologists have gone further, and

have claimed that water, besides its rôle in repairing waste, promotes the combustions of the economy by augmenting the production of urea.

Pick, Bischoff, and Genth have defended this view, the latter by experiments performed on himself with great scientific rigor. Genth, after a diet day by day the same, sees the figure of urea increase with the quantity of water ingested, and in such a proportion that, after drinking 1485 grammes of water, he voids 1250 of urine, containing 40 grammes of urea. With the ingestion of 2 litres of water, the quantity of urea rises to 48 grammes; with that of 4 litres, to 53 grammes. Forster, Henneberg, Stohmann, Schmiedeberg, confirm by experiments this disassimilating action of water. In France, Germain Sée adopts also this view, and our colleague and friend, Alfred Robin, by experiments made on himself, arrives at the same results as Genth,—that is to say, that water augments the quantity of urea excreted.

The two subjoined tables well show the action of water in promoting denutrition.

EXPERIMENTS OF GENTH.

Regimen.	Solid materials. Grammes.	Urea. Grammes.	Relation of urea to solid materials.
Ordinary regimen....	70.129	43.269	61.6
2 litres of water.....	73.057	48.359	66.1
4 litres of water.....	75.356	53.194	70.5

EXPERIMENTS OF ALBERT ROBIN.

Regimen.	Quantity of urine.	Density.	Solid materials. Grammes.	Urea. Grammes.	Relation of urea to solid matters.
Average of five days.....	1200	1023.5	65.75	32.53	49.4
Average with 1250 gr. of water.....	2150	1013	65.33	34.76	53.2

All these conclusions have found in our colleague Debove a resolute opponent. In a first series of experiments, he showed that in hypnotized hysterical patients, as long as the diet remains the same, the quantity of water ingested in no respect influences the figure of urea. But to objections which were presented by reason of the subjects of experimentation which he had chosen, it being notorious that hysterical persons offer the most strange perversions of nutrition, he repeated his experiments with his laboratory chief, Flanant.

These experiments went to show that the only modifier of urea is the quantity of food ingested, and that water plays no part in this elimination, although in his experiments he varied the quantity of water introduced from 1 to 4 litres. At the same time he recognized the fact that every time that the quantity of water falls below a certain minimum—i.e.,

1 litre—the individual loses flesh, and the figure of urea diminishes.

Despite the rigor with which the experiments of Debove have been conducted, I persist in believing that the rôle of water in nutrition is one of real importance, especially when the water is taken with the food, and I base myself on the laboratory experiments of Schiff and Vigier rather than on the contradictory results of Robin and Debove.

The first of these experimenters begins by determining the digestive power of an animal. He takes a dog during the period of digestion, kills it, and removes the stomach, which he cuts up in little pieces and infuses in 500 grammes of acidulated water; then he estimates the quantity of albumen which these 500 grammes of water can digest. This varies on an average between 70 and 75 grammes. But if the quantity of water be augmented, and in considerable proportion,—that is to say, by adding 200 litres more,—it is no longer 75 grammes which are ingested, but 75 kilogrammes.

Vigier, in some experiments absolutely different, has arrived at the same results. If you place in four separate flasks 60 grammes of water, acidulated by 1 per 1000 of hydrochloric acid, 50 grammes of pepsin and 10 grammes of fibrin, and if to three of these you add variable proportions of peptones, and do

not make this addition to the fourth, you will see that it is in the latter only that digestion is completed at the end of six hours, while in the three others it is retarded exactly in proportion to the quantity of peptones which you add.

During our meals, when we ingest a certain quantity of water, we facilitate the passage into the rest of the digestive tube of the peptones constantly formed in the stomach, and in this way we favor the action of the gastric juice on the food ingested.

Hence, then, while recognizing that water does not act by promoting disassimilation, it is plain that it is indispensable to nutrition, and that it favors in a certain measure the digestive function. I shall, however, have more to say on this subject when I come to the hygiene of drinks, and the influence which the abundance or suppression of these beverages has in the treatment of diseases of the stomach and in obesity. I am now done with the pri-

mordial alimentary principles, and intend in the next lecture to treat of complete aliments.

THE PATHOLOGY AND TREATMENT OF DROPSY.

By JAMES BARR, M.D.

Read at the Liverpool Medical Institution, April 15, 1886.

(Concluded from page 442.)

TREATMENT.—This paper has already assumed such lengthy proportions that I cannot do more now than deal with the general principles of treatment, leaving the consideration of details to some future occasion. As in every other disease, our first object should be to remove the cause, or, as far as possible, remove the conditions on which the dropsy depends. If the fluid be poured out in consequence of inflammation, then there is very little hope of successfully treating the dropsy until you have allayed its cause. You may no doubt, in many instances, remove the fluid by mechanical means, but if the inflammation continues fresh fluid is soon poured out, and this in many cases takes place very rapidly, because the mechanical removal of the fluid diminishes the pressure on the external walls of the capillaries, and so relatively increases the tension within. Pleural and pericardial effusions afford about the only instances where it may become imperative to remove the fluid during the progress of the inflammation. Every one must have noticed the rapid re-accumulation of fluid which frequently follows the tapping of the pleura under such circumstances. The pleural tension is never great, and is frequently negative, so that in many cases you cannot remove any fluid except by means of the aspirator or a siphon. It might be thought that the removal of a negative pressure could not much disturb the balance of pressure within and without the capillaries, nor lead to further transudation. It must be remembered, however, that in health the pleural cavity is abolished by the atmospheric pressure keeping the lungs distended against the parietes. The elasticity of the lung is opposed to this distention, so when effusion takes place it merely compresses the yielding lung. The fluid and inflammatory processes compress and bind down the lung, thus rendering its expansion difficult, and so when the fluid is removed the negative pressure within the pleura is great. The atmospheric pressure counteracts

this tendency to a vacuum by expanding both lungs as much as possible, contracting the chest-walls, raising the diaphragm, and causing a rush of blood into the lax vessels, which readily leads to renewed transudation. If the chest-walls be very rigid, you may get congestion of both lungs and bronchial œdema. This leads us up to the question as to what cases are suitable for operative interference, but however tempting the subject we cannot here approach it. After tapping the pleura I am in the habit of giving, with the best results, small and frequently repeated doses of aconite, with the view of quieting the circulation and diminishing the pressure in the pleural capillaries.

In local œdemas due to vaso-motor paralysis, posture is a most important point in treatment. We should as far as possible avoid the effects of hydrostatic pressure in distending the dilated vessels. In cases of fractures of the leg it is no uncommon circumstance to see the patient kept in a horizontal position for five or six weeks with the limb tightly bandaged, and the blood-vessels more or less damaged both from the effects of the injury and compression in the course of treatment. Immediately on removal of the splints the patient is allowed to place the limb on the ground, and the damaged vessels are dilated with the weight of the blood-column and force of the heart. It is not therefore surprising that surgeons have considerable experience in œdema of the lower extremities. The more rational treatment would be to keep the limb elevated for a week or two, and use passive motion and *effleurage* until the vessels have recovered their tone.

The dropsy of anæmia generally consists of œdema about the feet and ankles, though I have seen general anasarca without any other apparent cause. Although there is usually rather high tension, the blood-vessels are dilated, and the heart is unable to cope with its extra work. Treatment in the recumbent posture is very desirable, as it lessens the work of the heart and removes the effect of gravity on the lower extremities. Cardiac and vascular tonics are here demanded.

The different preparations of iron and arsenic are often advantageously combined with digitalis, though in the use of the latter drug some care is frequently required. It strengthens the heart's action, but it also increases the work it has to perform by contracting the arterioles, and this may be more than a feeble heart is able to accomplish. Hence, in many cases I often find it useful to

counteract its effect on the periphery by small doses of nitro-glycerin.

In the dropsy attending acute Bright's disease, there is defective elimination of water with consequent hydræmia; the capillaries are overloaded and the velocity of the blood in them diminished. In the early stages it is important to combat the inflammation of the kidneys, and for this purpose local or general blood-letting and antimony are the most effectual agents. The quantity of fluid ingested should be regulated by the state of the emunctories. In this form of dropsy free action of the skin is most important, not so much for removing the dropsy as for relieving the kidneys and getting rid of waste products. The emunctory function of the skin is great, and offers the best substitute for inactive kidneys. With many patients a most essential step towards free action of the skin consists of a warm bath with a liberal allowance of soap. Then the free perspiration is better maintained, and with more comfort to the patient, by hot air, rather than by warm water-baths. In many cases the wet pack is also very effective.

By sweating you can only remove fluid from the circulation in the skin capillaries, and before that which is effused can be thus eliminated it must be absorbed into the blood-vessels.

In some cases, where the anasarca is great, the skin distended, white, and glistening, and the blood thus driven away from the surface, it is most difficult to induce free perspiration, and in these cases you should not hesitate to puncture the limbs either with Southey's trocars or simply with the needle. The dread of producing sloughing by this procedure often deters from its performance until almost every other remedy has failed, and until a time when little more than temporary benefit can accrue from its adoption. In my experience you may advantageously puncture the limbs in the very early stages of the disease. Once the œdema of the cellular tissue is relieved, the blood circulates freely in the surface, and diaphoresis is easily promoted. I may here quote the following paragraphs from my paper on "The Pathology and Treatment of Tubal Nephritis":*

"Diaphoresis is usually best promoted, and with least depressing effect, by keeping the patient warmly clothed in bed, and giving him a hot-air bath each day, or every other day, as deemed advisable.

"The bowels should be well unloaded, at first with a strong cholagogue purgative, and afterwards there should be at least one free evacuation daily. Opinions differ very much as to the extent to which purgation should be carried. Some, with the idea of relieving the kidneys and removing the dropsy, have the intestines washed out several times a day with strong hydragogue cathartics, such as elaterium and compound jalap powder. It is held that an inflamed organ requires rest, and therefore you must make the skin and bowels do the work of the kidneys, but this idea of rest is frequently carried to the degree of severely depressing the vitality of the patient. I quite agree with Dr. Howship Dickinson† that 'much mischief has probably been done by purging and sweating, though in moderate measure and in due place these means of elimination are not less than invaluable.' 'Hydragogue purgatives and vapor-baths, however necessary when uræmia is pressing, must be used cautiously, as tending to divert the water which is wanted for washing out the uriniferous tubules. The repeated use of hydragogue purgatives should be limited to obstinate and hopeless cases.'

"Our object should be to establish the function of the kidneys as soon as possible, for at the best the skin and bowels are poor substitutes. As long as the inflammatory process is progressing the discharge of urine will be scanty, and there is little use in giving remedies specially intended to increase it. Then we should endeavor to subdue the inflammation, clear the bowels, and promote the action of the skin. When these desirable objects have been attained, and the circulation in the kidneys restored, then we should encourage the free discharge of urine. If the views which we have expressed on the pathology of albuminuria be correct, then the free discharge of urine will lessen the congestion of the kidneys, and thus promote their recovery. As the velocity is increased, the lateral pressure will be diminished in the Malpighian capillaries, and the copious discharge of water will wash away the debris in the tubules. The transudation of water from the Malpighian capillaries is purely a mechanical process, and by diminishing the congestion of the kidneys and clearing out the tubules, it gives true rest to the organs. Dr. Dickinson says, 'Physiological repose is to be sought, not by debarring the glands of the harmless and necessary solvent, but by cutting off the

* *Liverpool Medico-Chirurgical Journal*, July, 1883.

† *Pathology and Treatment of Albuminuria*, p. 115.

materials of urea and uric acid. Spare diet and "spring water clear" may often be found sufficient though simple remedies. Of all diuretics water is the best.*

"My revered teacher, Professor Gairdner, strongly advocates the use of mild saline diuretics, especially the bitartrate of potassium. He says,* 'My own practice being usually to give the compound jalap powder in doses of from 10 to 30 grains every four hours until purgation is established, which is followed up by cream of tartar solid, in electuary, in 20-grain doses; and finally, when diuresis occurs, as often happens in a few hours, it is kept up by the cream of tartar in solution given alone, or with orange or lemon peel (imperial drink) indefinitely, and with the happiest results, etc.' It will be thus seen that Dr. Gairdner differs from Dr. Dickinson in not surcharging the blood-vessels with extra fluid until the action of the kidneys is attained, but then he has no objection to a free allowance of 'spring water clear.'

"I have frequently seen diuretics succeed in removing the dropsy, and with the best results to the patient, when diaphoretics and purgatives failed. About the best diuretics, in these cases, are bitartrate, acetate, citrate, and bicarbonate of potassium; and we may also include the salts of sodium and lithium. These alkaline remedies have not only the advantage of rendering the urine less acid or alkaline, but also increase the elimination of acid from the system. Dr. Beale in his remarks† 'On the Effects of Diuretics and Sudorifics in certain Acute Inflammations,' says, 'The increased secretion of urine, the profuse sweating, often accompanied with increased action of the bowels, which mark the occurrence of resolution of the inflammation,—that is, of the death of the cells or masses of germinal matter which enter largely into the formation of the "inflammatory lymph,"—are undoubtedly encouraged by giving acetates, citrates, carbonates, and some other salts.'

"In obstinate and chronic cases more stimulating diuretics may be used, such as squills, sweet spirits of nitre, broom tops, oil of juniper, etc. When the heart's power is flagging, and the blood requires more motion imparted, then digitalis is the agent required. It may be presented alone, or in combination with other diuretics, or administered hypodermically in the form of digitaline. Some think

highly of digitalis fomentations, but personally I have never been quite convinced of the *rationalité* of the treatment, as, especially in those cases of dropsy, the absorptive power of the skin must be very slight, and there cannot be much special action through the nervous system. I prefer giving the digitalis in some of the before-mentioned modes, and applying fomentations to the loins without any anticipations beyond those to be expected from heat and moisture. If there be much anæmia and defective vascular tone, it may be necessary to employ iron in the treatment of the dropsy.

"Benzoate of ammonium is a favorite remedy with me in Bright's disease, especially where there are any uræmic symptoms, in which cases I have seen most beneficial results. It is a cholagogue and diuretic, and can be prescribed with the acetate or citrate of potassium, liq. ammon. acetat., etc. Dr. Garrod has shown‡ that benzoic acid and its compounds are not only discharged in the urine as hippuric acid, but they also convert uric into hippuric acid."

In granular kidney, dropsy does not take place until the late stages, when the heart begins to fail; our treatment should therefore be directed to strengthening this organ and lessening the amount of work which it has to perform.

In the second class of cases of dropsy our efforts should be directed as far as possible to remove the obstruction. When a vein is occluded we should favor collateral circulation, use postural treatment so as to remove the influence of gravity, and thus encourage the return of blood and lessen the supply. Lymphatic obstruction does not usually give much trouble if there be no inflammation. In cases of ascites due to cirrhosis of the liver it cannot be supposed that the obstruction ever disappears; yet many cases are permanently cured, and this is no doubt due to the blood-vessels of the abdominal viscera adapting themselves to altered circumstances, and so contracting their lumen that the blood-supply is no greater than that which can be returned by the portal system. This condition is favored by lessening the amount of fluid taken in, vaso-motor tonics, moderate catharsis, and diuresis.

In removing the obstruction due to heart-disease, we employ cardiac tonics, rest, diuretics, and cathartics, and frequently lessen the supply of fluid so as to diminish the work of the heart, lessen the hydræmic and statical condition of the blood in the capillaries.

* "The Treatment of Bright's Disease, with special Reference to the Use of Diuretic Remedies," *Glasgow Med. Journal*, September, 1880.

† *Kidney Diseases*, etc., 3d edition, p. 204.

‡ Lumleian Lectures, *Brit. Med. Journal*, April 21, 1883.

Where there is obstruction in the lungs, we also use expectorants and emetics.

We have now to consider the various agents which we employ in the treatment of dropsy, and we will first deal with the question of lessening the supply of fluid. This is a very old treatment, but it is one which has, in my opinion, been too much discarded of late years. It is no uncommon thing to see the medical attendant in a case of dropsy determining that the patient is to be sweated, purged, or plied with diuretics, and carrying out his intention with a very vigorous hand, but not paying the slightest attention to the amount of fluid taken in. If you want to empty a reservoir quickly, your attention should not merely be taken up with increasing the outflow, but also to cutting off the rivulet which keeps it full. If the outlet cannot be made greater than the inlet, then your efforts will be futile until you direct your attention to the latter. When the emunctories are acting well, and the heart's action vigorous, then you need pay little heed to the amount of fluid taken in. In fact, in many such cases—as in acute tubal nephritis when the inflammatory mischief has subsided—the best diuretic is an abundant supply of pure water or milk. But where the excretory functions act badly, and especially where there is structural disease of the myocardium, then all heroic treatment should be avoided, and the amount of fluid taken into the body should be carefully regulated. In local dropsies, lessening the supply of fluid ingested can have no beneficial effect; in short, this negative treatment is only of use in the conditions which I have just indicated.

External Agents.—I have already referred to posture in the treatment of dropsy due to *vaso-motor* paralysis. This can be beneficially supplemented by friction with or without a rubefacient, and the application of a mild counter-irritant such as iodine. The recumbent posture is very essential in the treatment of most cases of dropsy, especially in that arising from heart-disease. In large, fat, flabby individuals, where the cardiac degeneration is not far advanced, and the eliminating organs fairly healthy, *massage* gently and judiciously applied is often very useful in improving the tone of the tissues and getting rid of part of their superabundant fat. Such persons are usually gourmands, who will not readily believe or admit that their tissue-degeneration has been brought about by their habits. They should be taught merely to eat to live, and that in proportion as they reduce

the size of their paunch they will lessen the work of the heart and prolong life.

Counter-irritation, even to the extent of vesication, is often of great service in chronic effusions from inflammation of the peritoneum or pleuræ. In hydrocephalus it may be tried, but here you must depend more on general treatment. Occasionally you meet with cases, especially in men of middle or more advanced age, with symptoms of rapid cerebral effusion, due to over-fatigue and consequent nerve-exhaustion, without any organic disease. In these cases the prompt application of liquor epispasticus to the nape of the neck, or even over the whole of the shaved scalp, may save the patient from an untimely end.

Mechanical Removal of the Dropsy.—The advisability of thus getting rid of effused fluid and the time to operate have long been disputed points. For my own part, I am inclined to steer a middle course, and if anything to err on the side of caution. It should be borne in mind that this is only a palliative means; a removal of the fluid does not remove the cause of the dropsy. A cure may follow the removal, but then there must be no fresh effusion, or at any rate a balance must be established between effusion and absorption. Dr. D. J. Leech offers some very sound advice, in an excellent paper on the "Treatment of Dropsy" in the *British Medical Journal*, October, 1882, on the uselessness of energetic treatment in many cases of dropsy. In advanced heart-disease, with degeneration and loss of elasticity in the tissues, he tersely remarks that "it sometimes happens that we cannot drain the water from the œdematous tissues, even when they are pricked or tapped; much less can we remove it by inciting the kidney, skin, or bowel action. We can, indeed, no more remove fluid from the tissues by these means than we can drain a soaked sponge by a trocar."

In many cases, however, the distress of the patient is so great, that even those who reserve tapping as a *dernier ressort* are obliged to have recourse to this method of relief. In the general anasarca of acute Bright's disease, where the skin is white and glistening and not perspiring freely, I am in favor of early puncturing of the limbs or tapping with Southey's trocars. In the later stages of kidney-disease and in heart-disease, puncturing the limbs affords very little permanent benefit, but it is often urgently demanded for the relief of other organs. In large accumulations of fluid in the pleura, I am in favor of tapping as soon as the inflammatory symp-

toms have subsided, though I avoid doing so when the temperature is high, unless the symptoms be very urgent. After tapping, I try to lessen the inflammatory reaction by the use of aconite. I have at present a patient under my care where I have had reason to regret a departure from this rule. The dyspnoea was getting rather urgent, and I tapped earlier than I am accustomed to do; immediately afterwards the temperature rose very high, he became very prostrate, and for some days was in a critical condition, from congestive pneumonia, though I am happy to say that he is now progressing favorably. On the other hand, if you delay the paracentesis too long, the collapsed lung may be irretrievably damaged. You must take into account not only the saving of the patient's life but also the restoration of the function of the lung. The older the patient and the more rigid the chest-walls the greater caution required in paracentesis, and in such cases I think it always well to draw off only a small portion of the fluid. In pericardial effusion, the urgency of the symptoms must be the guide for operating.

In cirrhosis of the liver early tapping is to be commended, but other treatment should not be neglected. All stimulants should be interdicted, the climate should be bracing, the patient should be enjoined to take active exercise, and *massage* of the abdomen will be found useful. The food should be light, nutritious, and in small quantities, the portal system should be kept comparatively empty, and hence the quantity of fluid should be carefully regulated. This aim should also be attained by moderate purgation and a stimulating diuretic, such as balsam of copaiba. Diaphoretics are worse than useless.

Dr. B. Ward Richardson, in his extremely interesting investigations on injection of the blood-vessels through the cerebro-spinal cavity,* has shown "that the chief point of exit for gases or fluids in the cerebro-spinal canal is by the veins of the canal into the branches communicating with the inferior cava at its lowest part. The fact has many practical bearings, inasmuch as it leads to the almost certain inference that the cerebro-spinal fluid, which is always being secreted, finds its return current into the venous circulation in a similar manner, and that the cord and brain are thus relieved of pressure from it." He records a case of great ascites, where "the patient was quite unconscious, breathed with deep stertor, and had frequent convulsive

starts and tremors." . . . "We had drawn off about eight pints of fluid, letting it flow through an india-rubber tube into a metal pail by the side of the bed, when, to our intense surprise, our patient raised his head and asked, as if awaking from a dream, 'what it was that was running.'" I have myself seen several instances which would support these views of Dr. Richardson.

The old treatment of hydrocele by tapping and injecting iodine, and thus setting up inflammation, which obliterates the sac, is I think usually adopted. Gynæcologists have taught us that the best treatment for ovarian dropsy is to extirpate both cause and effect. The spaying question has caused a division among them as to whether the same treatment should be generally extended to hydro-salpinx.

Mechanical Support.—After tapping the pleura or peritoneum it is well to give as much mechanical support as possible, and lower the negative pressure on the external walls of the blood-vessels, by tightly strapping with strong adhesive plaster. We have already spoken of postural treatment, and this may be supplemented in many cases of œdema of the extremities by the support of a bandage. This, of course, is chiefly of use in dropsies having a local origin. When Dr. Martin brought his elastic bandages prominently before the profession I recollect reading an account of their application in the treatment of dropsy, by a gentleman of a "speculative turn of mind." In a case of cardiac dropsy he drove the œdema, by their use, from the lower extremities to reappear higher up. He innocently (or I had better say ignorantly) regretted the occurrence of ascites, as if it had not been for this untoward event, and the death of the patient, he quite expected to have cured the dropsy.

Diuretics.—This subject is so extensive (but all the agents of this class are well known) that we cannot do more than barely mention it here. In estimating the action of any diuretic careful attention should be paid to the amount of fluid imbibed,—e.g., in calculating the diuretic effect of bitartrate of potassium you must also take into account the large quantity of water in which it is usually administered. Of the diuretics which act by raising the general arterial pressure, the best are pure water, digitalis, caffeine, squills, convallaria, alcohol, ammonia, and senega. The last two are specially useful where there is lung-complication. In broom tops I have never had much faith, and my experience of sulphate

* *The Asclepiad*, January, 1884.

of sparteine and adonidine is as yet too limited to speak with any degree of confidence. As a cardiac tonic, strophanthus has the commendation of the high authority of Professor Fraser, but its scarcity has as yet prevented its general use. These drugs are often advantageously combined with agents which dilate the renal arteries or arterioles generally, such as sweet spirits of nitre, small doses of nitro-glycerin or nitrite of sodium, as thus a larger volume of blood is sent through the kidneys and the arterial tension is prevented from rising so high as to overpower the heart. The saline diuretics are also useful in heart-disease. In hepatic dropsy *copaiba* is most useful.

From what I have previously stated, it may be gathered that in kidney-disease I am in favor of bland diuretics, such as pure water, milk, bitartrate, acetate, and citrate of potassium, benzoate of ammonium, etc.

Diaphoretics are only of use in dropsy arising from disease of the kidneys, and here they are of more value as eliminators of waste products than for removing the effused fluid. I have already sufficiently referred to their use in this class of disease, but I now wish to offer a word of caution regarding the popular diaphoretic pilocarpine. It is an exceedingly powerful and certain sudorific, but it is one which should be used with great care, owing to its very depressing effects and its tendency to paralyze the respiratory centre and produce congestion of the lungs. The quantity hypodermically administered should rarely exceed one-fifth of a grain every other day. The free manner in which I have seen this drug injected has made me think that frequently the patient's life stands in greater danger from the remedy than the disease. A fatal œdema of the lungs is perhaps occasionally ascribed to the malady, when the pilocarpine should rather be thus credited. Oculists, also, frequently prescribe this drug in detachment of the retina (sub-retinal dropsy), more, I think, because it is at present the fashion to do so than from any good effects that have resulted from its use.

Purgatives.—In all forms of dropsy it is well to keep the bowels unloaded, but I am much averse to very active purgation; the good results are frequently more than counterbalanced by the depressing effects which follow, and the fluid removed soon reaccumulates. In renal dropsy, however, their use is often urgently demanded. Dr. Matthew Hay, in his valuable work on the Saline Cathartics, has shown that if the patient abstains from

all fluids for some hours, and then takes a concentrated solution of sulphate of magnesium, there is a most profuse watery discharge from the bowels, which, as a consequence, greatly lessens the dropsy. He ascribes this action of the salt to its stimulating effect in secretion rather than to any osmotic action, and no doubt his proofs are very strong on this point, but still I think that he places too low an endosmotic equivalent on the solution, reckoning rather from the equivalent of a one per cent. than that of a concentrated solution. I am, therefore, of opinion that, although it is a strong stimulant to secretion, it has also a very considerable endosmotic effect. Dr. Hay thinks that this mode of treatment is chiefly valuable in ascites arising from heart-disease, and in this I agree with him, provided there be not advanced degeneration of the cardiac muscle. When the tissues have lost their elasticity and the abdomen is flabby, it is highly probable that the fluid will pass much more rapidly from the blood-vessels into the intestine than from the peritoneum into the abdominal vessels, and thus there may be such a rapid fall of the blood-pressure as to stop a feeble heart. This is more especially apt to occur, as during defecation the patient usually adopts the sitting posture, so the arterial blood-column may not reach the brain, and thus fatal syncope may be the result. I am afraid, if this treatment be adopted as a matter of routine, many patients will end their days in the water-closet rather than in their bed.

There is no royal road to the treatment of dropsy, but a careful consideration of the pathological conditions of each individual case, and a sound application of physiological principles of treatment, with a judicious mixture of common sense, will frequently lead to very happy results.

Discussion of Dr. Barr's Paper.—DR. CARTER at that late hour would confine himself almost entirely to a few points of practical interest. He would venture to suggest, however, that if the somewhat dangerous task of systematizing were entered upon,—dangerous because it always tempted more to narrow facts down to suit the system,—a more practically useful subdivision of dropsies than the one adopted by Dr. Barr might be made. He thought they might be classed into inflammatory and mechanical, with a third subdivision where, as in many renal affections, inflammation of one organ led to mechanical obstruction in others. Inflammatory dropsies seemed to tend to cure, while mechanical dropsies for the most part grow worse and worse.

Not unfrequently a mechanical was purposely converted into an inflammatory dropsy with the design of curing it. A hydrocele, for example, was tapped, and its sac injected with some irritant fluid, the first effect being to produce a dropsy greater than before. But this inflammatory fluid, unlike the fluid mechanically poured out, was soon absorbed, and then it was found that the surfaces of the serous membrane had undergone such an organic change as to render further effusion impossible. Something similar must often take place in the pleura. In examining hospital adult patients *post mortem* nothing was commoner than to find pleuritic adhesions. Indeed, it was rare to examine a body without finding them. The original pleurisy must have been attended with *some* fluid, but this becoming absorbed, the surfaces adhered and a cure of the dropsy took place.

Turning now to the purely practical part of the paper, Dr. Carter would have been glad to hear from Dr. Barr some qualification of his general recommendation of the use of iron after such dropsies. He (Dr. Carter), as he had stated elsewhere, was quite certain that the employment, especially of the astringent preparations of iron, such as the tincture of the perchloride, was often carried too far. He had seen the elimination of urine diminished or checked, and headache caused by their administration. Sometimes spontaneous diarrhoea came to the patient's relief, and no permanent injury was done; but he thought that the general recommendation to use these salts should be carefully guarded by a precise statement of the conditions where they were applicable. On another point he was not quite sure that he could agree with what was said rather by one of the authorities quoted by Dr. Barr than by Dr. Barr himself. It was the deprecatory tone in which prolonged sweating was spoken of. The free action of the skin afforded the greatest relief, not only to the kidneys physiologically, but as well to the dropsical tissues; and he felt quite certain that this free action might be kept up, especially in young patients, for weeks together, not merely without injury but with positive advantage. When the time came for the patient to move about, if the upper and lower extremities were supported by the gentle pressure of evenly-applied bandages, no harm ever came of the previous relaxation. One practical suggestion he was inclined to make with regard to the cases where albumen and even blood would keep recurring so soon as the patient was allowed to get up and move

about, and this was as to the general advantage of turpentine. It must be given strictly within the limits of its *astringent* effect, ordinarily not beyond 5 minims for a dose, and would be often found extremely useful in checking the outflow when other remedies failed. But as for the employment of it in irritant doses, or of any other irritant form of diuretic, in renal dropsy, he desired here, as he had done at a meeting of the British Medical Association a few years ago, to raise his voice against the practice. Even his recommendation of the *vin diuretique* would be found, on referring to his book, to be confined to cases where the dropsy and albuminuria resulted from the congestion from cardiac disease. In renal inflammation of an acute or subacute character he believed more strongly than ever, with increasing experience, that the best plan was to promote the action of the skin by the warmth of the simple diaphoretics, and perhaps the hot-air or vapor bath; to supply a simple non-irritating diet; to keep the bowels moderately open, but to let diuretics alone. He could not conclude the desultory remarks that he had made without expressing his sense of the great ability of the paper and his regret that the lateness of the hour practically precluded them from discussing it with the fulness that its importance merited.

DR. E. H. DICKINSON would like to reiterate the praise which Dr. Carter had bestowed on this valuable contribution to the literature of the subject. If he were to pass a word of adverse criticism, it would be that the paper was too long, and he thought it would have been well if Dr. Barr had divided the paper and had only taken up one portion of it to-night, and thus allowed more time for discussion. Dr. Dickinson highly approved of the skim-milk treatment of various forms of renal disease; he had tried it very largely with the best possible results. In renal dropsy you should avoid all irritant diuretics, and use only those of a very mild character. He had had good results from digitalis fomentations applied to the loins; the heat and moisture acted favorably on the kidneys, the flow of urine increased, and the dropsy disappeared. In cardiac dropsy he preferred the fresh infusion of digitalis to any other preparation of that drug.

MR. F. T. PAUL had some years ago taken much interest in the question of renal dropsy. It seemed to him that we scarcely looked correctly at the nature of disease. There is a suppression of the renal function in acute

Bright's disease, with retention of the effete materials in the blood, which thus passed out of the circulation into the cellular tissue, and so saved the patient from their poisonous effects. It seemed as if the patient passed his water into his cellular tissue. As the function of the kidneys was restored, the excrementitious products were got rid of, and the dropsy disappeared. The reasons why there was so little dropsy in cases of granular kidney are that the function of the kidney is not suppressed, and there is no great retention of urea in the system. The diet should be light, and as free from nitrogen as possible.

DR. ARCHER remarked on the value and interest of the paper, but at the same time thought that Dr. Barr attached too much importance to the mechanical or hydrostatical causation of dropsy. The condition of the tissues conducing to dropsy did not receive that attention that it ought to. It was laid down as a general principle that inelasticity of the arteries favored transudation; this is doubtless the case, but Dr. Archer asked the reader of the paper how he explained the fact that in the case of a small contracted kidney (the arterio-capillary fibrosis of Gull and Sutton) we rarely had dropsy to any extent, although the vessels were usually rigid to a considerable degree. He also thought the reader of the paper attached undue importance to obstruction in the arterioles and capillaries, and regarded the lymphatics as taking but very little if any part in the pathological process. Pleural and pericardial effusions were instanced as conditions in which the lymphatics were likely to be as much at fault as the minute blood-vessels. Dr. Archer mentioned the different characters of the fluid found in simple pleural effusion. In some cases the fluid withdrawn coagulated spontaneously, and in these, older writers, from close clinical observation, were led to the conclusion that the fluid was not likely to reaccumulate to any large extent. This had been occasionally verified by the speaker. It was suggested that possibly this difference in the character of the fluid might be explained by the lymphatics being primarily affected in one case, the blood-vessels in another. With respect to treatment, the speaker confined his remarks mainly to the dropsy of post-scarlatinal nephritis, as being that of which he had most experience. Generally speaking, he condemned the use of diuretics, especially the more irritating ones. In these cases the occurrence of dropsy should be anticipated and prevented by milk diet, rest in bed, and vapor-

baths. The medicinal treatment in these cases was *nil*.

MR. PRESIDENT AND GENTLEMEN,—I have now to thank you very sincerely for the patient hearing which you have accorded to my long and, I am afraid, wearisome paper. I have also specially to thank my friends, Dr. Carter, Dr. Dickinson, Mr. Paul, and Dr. Archer for their kind criticism.

Dr. Carter rather takes exception to my classification of dropsies, but I think his division into inflammatory and mechanical is more objectionable. I had such a division before my mind when drawing up my paper, but could not entertain it, as, from a physical point of view, it is quite untenable. Inflammatory dropsies are also mechanical, and even Dr. Carter is obliged to admit a subdivision, "when, as in many renal affections, inflammation of one organ led to mechanical obstruction in others." Dr. Carter thinks a strong point in favor of such a classification is that inflammatory dropsies tend to cure, while mechanical, as a rule, grow worse and worse. While many cases of dropsy are incurable, and it would be well if the physician would always recognize the limits of his power rather than attempting the impossible, yet I will not admit that any class of dropsy is incurable, so you cannot have a classification into curable and incurable. Many cases of dry pleurisies which end in adhesions scarcely merit the name of dropsy.

Dr. Carter thinks that I should have expanded my views on the use of iron in acute dropsies, but if I had entered minutely into all the details of treatment I am afraid this lengthy paper would have assumed ten times its present proportions. However, if Dr. Carter will do me the honor of reading my paper on the "Pathology and Treatment of Tubal Nephritis,"* he will find the following statement:

"To lessen the anæmia which always exists in these cases, iron in one form or other is essential, but the tendency is to give it in too large doses. The quantity of iron which can be assimilated at any time is small, so any excessive amount only passes off by the bowels, and most likely disturbs the digestive organs, which in these cases are very readily upset. Iron should not be given when the tongue is dirty and the hepatic functions disordered, as it will likely aggravate these dyspeptic troubles, greatly increase the arterial tension,

* *Liverpool Medico-Chirurgical Journal*, July, 1883.

and thus augment the evils it was intended to remedy. When giving iron it may be combined with a purgative, but at any rate the bowels should always be kept freely open. The tinct. ferri perchlor. in 5-minim doses is a valuable remedy, and it may be advantageously combined with ammon. chlorid., magnes. sulphat., etc. Iron in combination with the vegetable acids, in form of citrate, acetate, and tartrate, may be prescribed with the salts of potassium, tinct. digitalis, etc., especially where any diuretic effect is required. The citrate of iron and quinine with digitalis and nux vomica often proves very efficacious, and no doubt many other combinations will suggest themselves to different observers under varying conditions."

Few have more strongly inveighed against the abuse of iron, and even in cardiac dropsy I have seen a patient who had been plied with digitalis and iron *ad nauseam*, rapidly cured with acetate of potassium and sweet spirits of nitre.

Dr. Carter scarcely does Dr. Howship Dickinson and myself justice on the question of sweating. We are both much in favor of it in renal dropsy, the only class of dropsy in which it is useful. It is its abuse we condemn. I am pleased to think that there is not much difference of opinion between Dr. Carter and myself.

My friend Dr. Dickinson and I are agreed on the main points in discussion, unless it be that he is more chary about the use of diuretics.

I cannot quite agree with Mr. Paul about renal dropsy being merely an effort of nature to get rid of excrementitious products. Unfortunately for his theory, the effusion does not always contain a large proportion of urea. In short, his theory is unlike the cellular tissue, "it won't hold water."

Dr. Archer thinks that I do not attach sufficient importance to the condition of the tissues and the action of the lymphatics in the production of dropsy, but he does not tell us to how much importance he considers them entitled. By merely asserting his opinion, without any argument or proof, he places himself outside the pale of legitimate criticism. I am sure he cannot expect me to alter my views on a subject to which I have devoted some thought, merely on his *ipse dixit*. I am always open to conviction, and if he will bring forward some evidence to prove that I am wrong, I shall have much pleasure in changing my opinions. I would have been very pleased to have expressed the relative

effects of the different causes in the production of dropsy in an algebraical formula if they admitted of such exactitude, but, unfortunately, the agents are very varying in their effects, and, as we have no constant to guide us, I have no wish to attempt any impossible definition. Regarding the effects of contracted kidney, I think I have sufficiently explained those in the paper. As to the use of milk, I think it is more frequently given for the disease than its dropsical effects. I am inclined to believe that when my friend Dr. Archer peruses the printed paper, he will find that those little defects which he thinks he has discerned are non-existent.

RECOLLECTIONS AFTER ETHER-INHALATION—PSYCHICAL AND PHYSIOLOGICAL.

BY GEO. E. SHOEMAKER, M.D., PHILADELPHIA.

THE following was written in substance within four hours of the administration of an anæsthetic for a surgical operation within the nose. It is intended merely as a record of a rather unusual experience, made with every attempt to give an unprejudiced statement of facts and impressions as they were presented at that time to the writer, without after-coloring. Lest the question of the unconscious influence of previously formed conceptions should arise, it may be stated that he had never before been anæsthetized, that he had not previously heard or read of any analogous experience, and had always supposed that such periods as were not a total mental blank were occupied by distorted visions produced or modified by surroundings, as so often observed in ordinary dreams. It had not occurred to him that there could be any element of reason in the talk of an ether subject, and consequently there was no previous intention to remember or record what he might experience. What this experience might be from a psychical stand-point had not been considered at all, and it was only after inhalation began that the attention was aroused and curiosity excited by a matter of physiological interest.

No dread of either etherization or of the coming operation being present, the inhalation was accepted with a feeling of entire ease and self-control as a mere matter of business. No physical distress was occasioned by it, irritation of the fauces and dyspnoea being entirely absent.

That which could be afterwards remem-

bered with distinctness may be said to have occurred during three periods: (a) of entrance, (b) of unconsciousness,* and (c) of recovery.

First. The period of entrance, which was brief and without excitement, as was afterwards learned.

As the efforts to breathe deeply were continued, the last sentence which could be voluntarily uttered was a rational question in regard to a sheet, which an attendant was directed to spread over me. Then the spreading of the sheet, the touch of the napkin to the face, and the coolness of the ether were distinctly felt; but an effort made immediately to speak a rational sentence failed from refusal of the vocal apparatus to respond to the idea. *I was conscious that I failed from this cause.* What this idea was which could not be spoken could not, unfortunately, be recalled after recovery; though at the time when the idea was formed there was a distinct judgment in favor of its rationality and a reflection on the failure of the vocal mechanism.

Swiftly running auras or waves seemed to follow one another rapidly from within outward over the limbs, and the "Ego" was gone.

Second. The period of unconsciousness, or the wave period.

There was present during this time, and only during this time, the single impression of *two endless parallel lines* in swift longitudinal motion, each line being deflected at a certain point to form a *wave*. There was a uniform misty background, and only a short section of the lines appeared, their total length being unsuggested. They seemed to be made up of points, closely set, so that their longitudinal movement was apparent. The lower line moved from left to right, but the direction of movement of the upper could not be recalled.

The lower line was caught up to the level of the upper so as to form a wave. At a corresponding point a descending wave was formed on the upper line, so that the two waves intersected, thus:



These waves maintained their one position, the idea of motion being conveyed by the points which made up the lines, these seeming to run over the elevations at a hurried rate, but with perfect regularity.

There was a constant sound or whirr, not loud, but distinct, as of small wheels or a spindle revolving with great swiftness. This sound-like impression seemed to be connected with the running lines, and ceased as they disappeared. (It may be remarked in passing that the only objective constant sound in the room was made by an Argand gas-burner. The subjective sound did not resemble this, and, moreover, suddenly disappeared.)

These phenomena occupied the whole field. There were present no dreams or visions in

any way connected with human affairs, no ideas or impressions akin to anything in past experience, no emotions, of course, no idea of personality. There was no conception as to what being it was that was regarding the two lines, or that there existed any such thing as a being; the lines and waves were all.

Later came a conception of the relation of those lines to me as an individual, but it was after the first conscious respiration and rational idea to be hereafter described.

After an indefinite time, without variation of the above phenomena, the line in the ascending part of the lower wave grew unsteady, secondary waves being momentarily established on the main curve.



Once or twice the whole lower wave fell

* The absurdity of speaking of anything belonging to a period of unconsciousness as being remembered represents only one of the difficulties experienced in trying to express in words that which impressed itself upon a mind, which for the time being was hardly a mind.

with an instantaneous motion, but it was at once restored.

Third. Period of recovery.

Just at this juncture I was conscious of taking a deep inspiration, followed by a profound respiratory pause; the succeeding in-

spiration being accompanied by the slight sound produced by air passing a lax soft palate when the mouth is open.

With this first conscious inspiration came instantly the first idea or thought of any considerable scope,—namely, that such a respiration during etherization would indicate deep narcosis, near death. There was no fear of death or other emotion; rather a feeling of interest and curiosity as to whether I had been near the edge of life while more deeply under the anæsthetic.

The waves were now lost, very rapidly, but not quite instantaneously, in spite of a strong and determined effort to retain a view of them. I was still unable to speak or move.

Somewhere in this period, probably after the long inspiration, and certainly before the waves disappeared and consciousness fully returned, came a number of curious ideas and impressions, many of which are wholly beyond recall, even the order of those remembered being unknown, except as indicated above. All that can be honestly done is to mention them one after another, with no attempt at sequence.

I was most profoundly impressed that I had been given a glimpse at the simplest expression or essential nature of human existence. It seemed perfectly clear that those lines represented or rather *were* my existence (*i.e.*, as a soul), and that the waves were my human or animal life; or, in other words, that the waves or animal life constituted a temporary modification of a primary condition. The waves were evidently exceedingly delicate, and the slightest disturbing force could apparently cause them to disappear and leave only the two lines. (This idea was strengthened by the flickering of the wave above mentioned.)

The idea obtained that here was a totally new conception to me and to mankind, and that I must remember all that occurred and recount it on completely returning to consciousness.

There was undoubtedly a definite order in which the various phases of consciousness returned, and I determined to grasp and remember the new impressions as they came one by one before me. At first there was no doubt that this could readily be done, all seemed so clear; but as I became more and more able to understand the surroundings in the room, I was less and less able to remember that which I so strongly wished and strove to retain.

There was now a *knowledge* that there was

an influence or power, absolute in authority, felt but not seen, entirely impersonal, separate from me and from humanity. This seemed as evident at that time as does now the existence of material objects around; the mind made no question of it while the effect of the ether was present. In the hands of this power memory stood helpless, controlled by its mighty influence. Firmly, inexorably was my determination swept aside, and I was prevented, in spite of the strongest effort and the most burning desire, from returning to full consciousness with a distinct knowledge of things which to man have always been mysteries.

It is simply desired to record these things as representing the state of the mind at that time; and no attempt is made to account for them, or to suggest that they were the results of the working of other than "natural causes." After full recovery from the ether a strong feeling of awe remained, which wore away gradually after several hours. The strange impressions took a deep hold upon me, and matter-of-fact and unimaginative as I am by nature, it took days to shake off the feeling that I had had a glimpse of another phase of existence; as well as to reason myself out of a new and undefinable dread of ever taking ether again. This last is the more strange since there were none of the common after-effects, such as nausea and vomiting, headache, etc., which would give a physical basis to such a feeling; and since I have always administered ether with the greatest confidence in its safety, when properly used; this confidence enabling me to take it on the day in question with the greatest composure.

On recounting this experience to a medical friend of wide observation and intelligence, it was learned that it was not altogether unique, but that he himself had been much impressed upon taking ether by phenomena which could not be accounted for as the natural workings of the human mind. With the object of recording and studying these phenomena he had again and again submitted to the anæsthetic, with invariable disappointment as regards results; motor paralysis coming on so early as to prevent his writing anything intelligible, and, after recovery, little or nothing being preserved by the memory. Though they were written seemingly in a humorous spirit, the following words of Oliver Wendell Holmes have considerable bearing upon the writer's experience. To quote his own account: * "I

* Mechanism of Mind and Morals, p. 46.

once inhaled a pretty full dose of ether with the determination to put on record at the earliest moment of regaining consciousness the thought I should find uppermost in my mind. The mighty music of the triumphal march into nothingness reverberated through my brain, and filled me with a sense of infinite possibilities, which made me an archangel for the moment. The veil of eternity was lifted. The one great truth which underlies all human experience, and is the key to all the mysteries that philosophy has sought in vain to solve, flashed upon me in a sudden revelation. Henceforth all was clear, a few words had lifted my intelligence to the level of the knowledge of the cherubim. As my natural condition returned I remembered my resolution, and staggering to my desk, I wrote in ill-shaped, staggering characters the all-embracing truth still glimmering in my consciousness. The words were (children may smile, the wise will ponder), 'A strong smell of turpentine prevails throughout.'"

Among the thousands who annually are anæsthetized there are few who retain distinctly impressions received while wholly or partly under the narcotic influence. It is not very uncommon for such subjects, however, to be profoundly impressed with the thought that something very wonderful has occurred; and that a systematic effort to record what could be remembered after such experiences would be rewarded by fresh insight into difficult psychological problems is not at all improbable. The conditions for the study are undoubtedly difficult to control. Many cases would be of little value on account of the early involvement of higher cerebral function; and in other instances it would be impossible to entirely exclude the influence of expectant attention, of education, and of temperament; but out of a large number of observations some valuable generalizations ought to be found.

The foregoing account applies to what should have been the regular course of the etherization, in which unconsciousness was not preceded, as has been said, by a period of excitement. Some time during the operation, however,—it could not afterwards be learned just when,—I am said to have so far recovered as to struggle with the greatest violence, and much ether was required to again produce muscular relaxation. Of this period there was at no time the slightest knowledge or recollection, and there were no phenomena remembered which can be associated with it.

Either at the end of this second application

of ether, or, more probably, when apparent unconsciousness first came on, the following physiological conditions were present and the recollection in regard to them was afterwards distinct:

Voluntary motion of the legs, arms, and vocal apparatus was impossible, though attempted.

Muscular sense was present, because the elevation of the chair-back and the dropping of the leg-rest of the physician's office-chair were distinctly felt, as I was seated upright to facilitate the operation. As the trunk rose the forearms dropped helplessly by the sides, with the palms upward, and one of the legs also adjusted itself by gravity.

No visual sensations were produced at the time; but as the eyelids probably remained closed, and there was no power to open them, nothing can be inferred as to the possibility of objective visual sensations.

No auditory sensations from movements of the chair, of clothing, or of persons were produced. No odor or taste was perceived.

Tactile sense was present, as the extensor surfaces of the hands felt the touch of the body on which they rested.

Only a modified general sensibility was preserved, at least in a portion of the distribution of the fifth nerve.

There was a very disagreeable feeling of distention of the left nostril, without actual pain.* Then an almost unbearable sensation on the same side, apparently produced by a cause operating in the direction of the median line.† This could hardly be called pain, but was worse than pain, and is remembered as the most intensely disagreeable sensation that I have ever had.‡ I would have made any effort to escape this, but was utterly powerless to move. Muscular sense was still present, for under the pressure on the nose the head turned somewhat, and the body slipped lower in the chair. There was not at this time a proper conception of my own or the surgeon's personality. There was, however, at the height of the disagreeable sensation a feeling as though a most atrocious advantage were being taken of my utter helplessness by somebody whom I had before implicitly trusted and considered a friend. The mental effect produced was simply horrible.

How this state of affairs changed, or when

* Probably produced by the finger of the surgeon being forced deeply into the nose.

† Afterwards verified.

‡ Produced by a chisel-like instrument operating within the nose.

it ceased, is not recalled, but a period of unconsciousness followed.

The interest of this experience is not solely from its psychical peculiarities. To the physiologist it appeals as one recorded instance, if only one, in which voluntary motion was lost, while general, tactile, and muscular sensibility remained in a very considerable degree, and for some length of time, together with at least some higher cerebral function, making it possible to note and remember various modifications of sensation.

It is a common practice with impatient surgeons to begin operations as soon as the muscles relax, but in this case acute suffering was endured after voluntary movement was impossible. While the subsequent production of deep narcosis may serve to obliterate all remembrance of pain from the mind of the patient, the depression following an operation must be increased if a flood of violent sensory impulses be poured upon those centres whose ill-regulated activity or inhibition gives rise to "shock." The gravity of this shock would then differ only slightly in degree from that produced by operation without an anæsthetic.

In degenerations of nerves following disease or injury it is well known that motor fibres lose their irritability before those of sensory function, and that anæsthesia is not always present in peripheral motor paralysis. That ether should first affect the less resistant motor functions would seem probable *a priori*. It is, however, generally held that the functions of the higher cerebral centres are first affected by this agent, then sensory functions, finally the motor.* This is indeed a matter of common observation, the so-called "stage of excitement," with its emotions, its delirious talk, and its active movements, speaking plainly of the early involvement of the intellectual centres, while co-ordinated muscular movement is still present. At this time stimulation of any sensory area is at once resented by the patient.

That in some instances, at least, general sensibility is lost before motion is shown by Velpeau's† case, in which the patient raised herself up to view a very painful operation,

but afterwards said she supposed she was at the dinner-table.

It is highly probable that no invariable rule can be laid down as to the action of ether on the nervous system of man, in regard to the order of the abolition of function; for certainly in the case here recorded motor paralysis first obtained. Personal idiosyncrasy undoubtedly plays a considerable part, and if we bear in mind the probability that the memory‡ will not afterwards serve, together with the patient's entire want of power to communicate his sensations at the time in the absence of motor control, we may ask with some pertinency whether the received ideas of the time when complete anæsthesia occurs are not wrong in more instances than we think.

The old question here comes up as to the possibility of the testimony of an ether subject having a certain value *in some cases* in regard to what occurred during the period of supposed unconsciousness. More than thirty years ago this question assumed a grave importance in a certain well-known criminal prosecution in this city, and growing out of the discussion, so wide-spread at that time, an exhaustive article was written by Dr. Moreton Stillé on the "Psychical Effects of Ether Inhalation."§ After citing various examples and authorities, the writer thus states the positions which he says may be assumed as correct:

"1st. That the consciousness or perception of external objects and impressions is impaired in the early and lost in the final stage of etherization.

"2d. That during the time the mind remains susceptible to external impressions at all, these reach it in a feeble or perverted manner.

* * * * *

"4th. That voluntary muscular movement is not paralyzed until the state of perfect narcosis is produced; at which time, however, all outward consciousness is extinct.

"5th. That the memory of what has passed during the state of etherization is either of events wholly unreal, or of real occurrences perverted from their actual nature.

"6th. That there is reason to believe that the impressions left by the dreams occasioned by ether may remain permanently fixed

* *Vide* F. E. Anstie, *Stimulants and Narcotics*, 1864, p. 315; Flourens, *Arch. Gén. de Méd.*, 4ème sér., xiii. 434; H. C. Wood, *Therapeutics*, 1882, p. 287.

† *Revue Médicale*, 1847, 101, p. 225. Compare Prof. Pitha's chloroform case. "Si io sento l'incisione, ma non sento dolori." *Vierteljahrsschrift f. d. prak. Heilkunde*, 1848, iii. 155.

‡ Further experiment upon the writer, made through the kindness of Dr. J. P. Crozer Griffith and Dr. Orbison, has been so far completely negative on account of this treacherous action of the anæsthetic on the memory.

§ *Phila. Med. Examiner*, 1854.

in the memory with all the vividness of real events."

These conclusions may be taken to represent the general opinion of the medical profession at the present day, but it will be seen that my own experience was directly opposed to the fourth point.

During the period when the operation was felt, it will be noticed that though consciousness was not perfect, and there was a distorted idea of the animus of the surgeon, it was so far preserved as to make it possible to realize accurately the position of the body and limbs, to feel suffering, and to refer sensations with considerable nicety, even in the nose, where points of stimulation cannot be located as accurately as where tactile sensibility is more highly specialized.

It may also be said that, while going under the anæsthetic, the mind was so clear at the time the vocal apparatus became paralyzed that sensory stimulation of any portion of the body would have been correctly located and afterwards reported. Of this the writer feels certain. Unfortunately, no such stimulation was made at the time.

A single example has little value except as one of many which may be compared one with another. It is with this idea in view that the present record is made. If it serve no other purpose, it may stand as one instance in which correct interpretation was given by the brain to some external phenomena at a time when the idea of personality was absent from the consciousness.

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ERYTHROXYLON COCA AND ITS ALKALOID, COCAINE.

By E. W. HOLMES, M.D., PHILADELPHIA.

IT has rarely happened to see any remedy spring so suddenly into prominence, on so sure a basis, as the alkaloid of erythroxylon coca. This results from its possessing a much-needed function,—local anæsthesia,—from its harmlessness, even in considerable doses, and from its efficacy, being readily tested and demonstrated to the two of our senses best trained,—sight and touch. Too often the question of drug worth depends merely on a more or less certain *belief*, but this is one whose effects can be made evident even to the most doubting.

The shrub from which the alkaloid is obtained is by no means a new discovery. The first European to describe it was Hieronymus

Benzoni, 1542, but the records of its use reach back still farther. In the earlier times the Peruvians regarded the leaves as something sacred, and only the Incas, the priest-rulers, were allowed to have it. They burned it on the altars, held it in the mouth while making sacrifices to the Sun-god, and baskets of leaves were also offered, as otherwise the gods could not be propitiated. The shrub itself came in for a share of their veneration, as it was thought no undertaking would prosper without the benediction of coca.

When the Spaniards invaded the country, they found the leaves passing current as money. Gold, silver, and precious stones were plentiful, but as ornaments only. Among the natives it became common as a masticatory, so that it has long been, and now is, one of the most valuable articles of traffic. It has been estimated some thirty million pounds of leaves are annually consumed, upwards of eight million persons being addicted to its use. The name is derived from *khoka* (pronounced *caca*), the tree,—*i.e.*, this tree above all other trees,—“that heavenly plant which satisfies the hunger, strengthens the weak, and makes men forget their misfortunes” (Stillé and Maisch). In certain districts the natives believe if a dying man can taste a leaf placed on his tongue, it is a sure sign of his future happiness, whilst others put the leaf in the mouth of the dead to insure his passage across the dark river, much as the Greeks placed an obolus under the tongue to pay old Charon.

The reliance on the virtues of the leaf is very great, as it is said to abolish both hunger and thirst, and induce great bodily vigor. One author states he employed a native to do some very laborious work. The man, during five days and five nights, slept only two hours nightly, and did not have any other sustenance than coca-leaves, which he chewed at intervals of two or three hours, and at completion of the contract expressed a willingness to perform the same service again if plenty of coca-leaves were supplied him. In travelling, the guides, to be found in good humor, must daily be allowed three resting spells, when they recline and chew their favorite leaf. Each one carries his *chuspa*, or coca-pouch, containing small round masses of leaves, which have been previously reduced to a pulp by chewing and then dried. Having placed one of these in his mouth, he thrusts into it several times a thin moistened stick which has been dipped in alkali, care being taken not to give pain by contact with the lips. This alkali is carried in a small gourd, and is

obtained from the ash of chenopodium quinoa or from calcined oyster-shells. The purpose of the alkali is to add pungency and (un-awares to the Indian) to develop the alkaloid. About two to three ounces of leaves are thus daily consumed, only the juice being swallowed. Although they can thus, with a little parched maize, and sometimes a little boiled potato, travel for days over the dreariest wastes, yet, when *at home*, many of them are not without more generous diet, as they eat the flesh of the llama, flour, and vegetables of various kinds, their principal grain being maize. Dr. Weddell states the Indians chewed coca all day, but at night ate like fasting men, so that it appears, then, not to have clogged the appetite.

The owners of the silver-mines find they can limit the quantity of other supplies, but must allow plenty of coca. Curiously, the men throw their "quids" against the rocks, as they believe the veins are thus rendered easier to work, this being the relic of an old superstition that the deities of the metals presiding over the mines rendered the mountains impenetrable unless they were propitiated by the odor of coca. A native will work twenty to thirty hours continuously, without sleep or rest, and the running messengers have been known to travel seventy miles a day for three days with no other sustenance (Knox, "Boy Travellers in South America," 1885). Not only does it seem to develop the maximum of exertion, with the least fatigue, upon a minimum of nourishment, but it also obviates the dyspnoea consequent upon climbing steep ascents and the attainment of great altitudes. This dyspnoea, called "the puna," is at times of sufficient severity to cause death. In many it occasions headache, vertigo, dimness of vision, with nausea, and sometimes blood flows from the eyes, nose, and lips. One writer (Acosta) thus quaintly relates: "I was seized with so mortal and strange a pang, with straining and vomiting, that I thought to have cast up my heart, for, having vomited up meat, phlegm, and choler, both yellow and green, in the end I cast up blood."

Another traveller states, that after eating a strong infusion of the leaves, he could hunt the whole day, at an elevation of fourteen thousand feet, without feeling more inconvenience than he would have under similar rapid movements on the coast. At the summit of the steepest passes are often seen stone-heaps spotted with masses of chewed leaves, aggregations from the mountaineers, who each has added a stone and his mouthful

of coca as a votive-offering to the deity who has thus far brought him safely o'er his rugged and dangerous pathway.

The shrub grows on the eastern slopes of the Andes, at a level of about five to six thousand feet below the frost limit, where the climate is moist and warm, and rains are frequent and plentiful. The seed is sown in December and January, and the young shoots are transplanted, and tended with great care, the ground being well tilled and watered. In about eighteen months the first crop is gathered, two, three, or even four crops being taken yearly. Each leaf should be picked separately. They are then carefully dried in the sun, and stored in the adjacent store-houses, though in former times they were packed in long narrow baskets, and carried to the plains on the backs of the native *xæos* (sheep). The leaves when fresh are a bright green, an infusion tasting something like a poor quality of green tea. The natives of Peru discard as worthless the leaves after they have been plucked more than five or six months. "Some assays have been reported from Bolivia which seem to show that the leaves when freshly gathered contain a much larger proportion of alkaloid than after transportation to this country" (Lyons, *Am. J. Pharm.*).

There is some difference of opinion as to the ultimate harmfulness of this habit. This much is certain: it is slavery. No one can be induced to break it off. Some say, however, they have never seen any deleterious results further than this, and adduce instances of longevity among its devotees. One of these makes the calculation that a coquero, or coca-chewer, who lived to be one hundred and twenty years old, had consumed about two thousand seven hundred pounds of the leaf in his lifetime.

Others, less enthusiastic in its favor, tell us a confirmed coquero can be recognized at first glance from his unsteady gait, yellowish skin, dim, sunken eyes, encircled with purplish rings, quivering lips, and general apathy. That the coca never causes total mental alienation, but excites the cerebrum and rouses the imagination, so that the subject "revels in pictures of ideal beauty," and the repeated stimulation from its excessive use, after a series of years, wears out the mental vigor and activity. That the system cannot be sustained on coca alone. The coquero is reduced to a skeleton, and may even finally die a victim to his passion.

Evidently long years of contact with the

outside world has not eradicated the craving among the Peruvians, nor has it taken root among other nations, as in the case of tobacco. Possibly it may satisfy some climatic need not felt elsewhere. By certain observers it is thought to act not only as a nerve-stimulant but also as a nutrient, they believing it to contain a component which absolutely takes the place of food.

As long ago as 1853 Wackenroder and Johnson indicated the existence of an active alkaloid, which was first isolated by Gaedeckoe (1855); its physical properties were carefully investigated in 1860 by Niemann, of Goslar, Germany, who gave it the name cocaine. Prof. Schröff, in 1862, mentioned its anæsthetizing power upon the lingual mucous membrane, which was confirmed by Dr. Von Anrep, of St. Petersburg, in 1879. It remained, however, for Dr. Koller, assistant physician at the General Hospital, Vienna, to discern its true value, and to bring it to the notice of the profession in all its practical bearings. Stimulated by the report of Von Anrep, and also by a paper on the same subject by his colleague, Dr. Sigismund Freud, he conceived its use in ophthalmology, and by experiments, first upon rabbits and guinea-pigs, then upon himself, friends, and patients, he gave it its legitimate place in the Pharmacopœia. His paper presented to the Ophthalmological Congress in 1884, I doubt not familiar to the reader, may be summarized, that he shows cocaine hydrochlorate to be a valuable analgesic for painful affections of the eyes, and an effectual anæsthetic in ophthalmic operations, producing conjunctival ischæmia, with dilatation of the pupil. Although his essay had reference only to its use in his own specialty, its more extended applications are only logical deductions from his complete scientific observations and experiments.

Experiments upon the lower animals indicate the effects of the drug are markedly in direct proportion to the amount of the dose, and not cumulative. *In frogs* it is lethal with about 6 grains, and this only after the lapse of twenty-four to thirty-six hours. Upon the heart it is found to act by increasing both its force and frequency, but later on, and in full quantity, the heart becomes irregular, the heart-beat diminished in force and frequency, the number of beats running down to four and six per minute. If a four per cent. solution be applied directly to the heart-muscle, the heart is arrested in diastole. *In mammalia* there is first a stimulation of the nerve-centres, followed by slight enfeeblement. The heart is accelerated and strengthened, the pulse becom-

ing fuller and stronger, excepting in overwhelming doses. The inhibitory nerves of the heart are readily paralyzed by medium doses (Turnbull). Blood-pressure is increased by stimulation of the vaso-motor centres and cardio-motor apparatus (Turnbull), and also by peripheric action on the capillaries, probably by stimulating the terminal endings of the sympathetic.

It paralyzes the sensory nerves by direct action on the terminal filaments, and later on abolishes reflex action by like effect on the posterior columns of the cord. If injected directly upon a nerve-trunk (and this is well worthy of careful notice), it paralyzes its whole distal distribution. It stimulates the respiratory centres, but death is due to asphyxia, the heart continuing to beat after breathing has ceased. The peristaltic movements of the intestine are increased, thus acting as a mild aperient. It has no appreciable effect upon the voluntary muscle, but its action on unstriated muscular fibres is as yet undetermined.

Bosworth has noticed that the drug causes a very notable contraction of the nasal corpora cavernosa, "the local application over the whole membrane covering the lower and middle turbinated bones causing these sinuses to become so rigidly contracted that all the blood which they may have contained is absolutely expelled, and the membrane clings closely to the bony structures, which then become visible in absolute outline." This he has confirmed by repeated observation, and has concluded cocaine "produces rigid contraction in unstriated muscular fibres." If this is so, the contraction of the capillaries, as well as the sinuses, may be due to direct action on their muscular coats, a method which, if I remember right, is shared only (though with paralyzant effect) by amyl nitrite. As the erectile tissue is dominated by the sympathetic, the whole phenomena, however, are fully explained by the established action of the drug upon that nerve.

Locally applied, it has slight (if any) effect upon the skin, unless denuded of epithelium. Superficial injection causes anæsthesia of the surrounding tissue to the extent of two to three inches, but deep injections affect the skin to a much less degree. When thrown down upon a nerve-trunk, while it affects the distal distribution, the centric portion, even a short space (immediately?) above the point of puncture, is uninfluenced. Dr. Corning has found when the local circulation, in a part into which a solution of cocaine has been injected, has been arrested either by an Esmarch

bandage or a tourniquet, the insensibility induced by the drug may be greatly prolonged, as thus the solution of cocaine is kept in contact with the filaments of the sensory nerves. When painted upon the mucous membranes, the tissues become paler and thinner, secretion is diminished, and sensation is completely annulled, the effect being greatest at the actual point of contact of the drug, and is in proportion to the strength of the solution used, and up to a certain point of the number of applications made. May this not be up to a limit of topical absorptibility (saturation)? It renders the conjunctiva and cornea completely insensitive, the ischæmia of the former being well marked, whilst it passes through the latter into the anterior chamber, as fluid extracted therefrom produces similar effects upon the other eye. "In eye under cocaine intra-ocular tension is decreased, and mydriasis is increased in a bloodless eye."

It dilates the pupil by local stimulation of terminal fibres of cervical sympathetic (the mydriatic nerve), and not by paralysis of motor oculi nor of circular fibres of iris. The degree of dilatation seems to vary. Knapp, of New York, reports, "pupil scarcely ever becomes as large as with atropine." Others have declared the mydriasis of atropine is increased, whilst I note one case of adhesions of iris, which had resisted atropine, broken up by use of cocaine.

"Accommodation is not wholly lost, the range of accommodation being shortened by recession of the near point from the eye, the far point not being appreciably influenced," its action being more upon the ciliary muscle than upon the iris (Knapp).

As a corollary to its contraction of the capillaries, the drug may yet develop useful qualities as an hæmostatic.

The contradictory reports of the action of the remedy may be reconciled, I think, either by exceptional idiosyncrasies, or from imperfect or insufficient methods of application, or from the use of inert preparations.

It should also be remembered that cocaine, being a product of organic chemistry, is liable itself to deterioration, microscopic growths nourished by the alkaloid destroying its efficacy, boric or salicylic acid being the best preventives of this change. The leaves also contain another principle, "hygrine," an active mydriatic (though cocaine seems to produce mydriasis independently of hygrine), also ecgonin, coca tannin, and coca wax, whose effects, but slightly known to us, may yet modify our conclusions. Those who

are interested in chemical analysis would probably be gratified to know that the formula for cocaine is $C_{17}H_{21}NO_8$, whilst in chemical terminology cocaine is a "methoxyethyltetrahydropyridinecarboxylate, whilst the impurity ecgonin is merely a methoxyethyltetrahydropyridinecarboxylic acid." Merck has succeeded in transforming benzoyl ecgonin into cocaine by heating several grammes with iodide of methyl and methylic alcohol, and then evaporating. The product conforms to all tests of genuine cocaine (THERAPEUTIC GAZETTE). Some of the samples used have been found to be adulterated with eserina, whilst another, which caused "a sharp urethritis" (Otis), was a druggist's impromptu mixture of the alkaloid with HCL. The fatal dose to man has not yet been reached. Twenty grains, taken with suicidal intent, produced vertigo, unsteadiness of gait, headache, nausea, vomiting, burning thirst, and abdominal gripings, all of which passed off in twenty-four hours.

I have applied from f3iv to f3vii (gr. 15½) of four per cent. solution to my own buccal pharyngeal and nasal mucosa in the course of four hours, and frequently less amounts to myself and others of same strength. In the smaller amounts, say 3ii, there is a rather pleasing sedative effect, a sensation of well being and well doing, of content with yourself and your surroundings, which is sufficiently marked to afford a ready inducement to further application. This sedation has never with me run into somnolency, though others on whom I used small amounts *seemed* to experience such result, whilst in children, relieved by cocaine from toothache or earache, sleep, I think, naturally followed the freedom from pain. In the larger amounts there is to myself a sensation of intense cerebral activity, with augmentation of thought-processes, and especially with stimulation of imaginative perceptions and fancies, and I must confess there is a certain witchery which is apt to entice one to further indulgence. Sleep is totally abolished, whilst the continued application induces the rather actual wakefulness, with further a degree of restlessness, which finally becomes almost painful. There is also vertigo and nausea, going on to vomiting once after 3iss, and again after 3v had been used, and very decided tremor of the voluntary muscles interfering somewhat with the use of the pen. The skin is covered with profuse cold clammy perspiration; the pulse is bounding (120), beating full and strong; the brain is on fire, and throbs with unnatural excite-

ment. In fact, after using the 3vii from eight to twelve one evening I could only break myself from its further use by decided effort, and could not compose myself sufficiently to go to bed till about 4 A.M., where I tossed, with little sleep, till my usual hour of rising, and in the forenoon endured an intense prostration it has seldom been my lot to experience, which by noon compelled me to abandon my daily rounds and return home, where two or three hours' sleep restored my pristine vigor and appetite. I can appreciate now, as never before, the glamour of opium and cannabis indica, and the wretchedness of after-repentance. The loss of appetite is well marked even with smaller amounts, and this is not at all satiety, the repletion of a Thanksgiving dinner, but with slight nausea, a disgust of food, which prohibits hunger, though there is not "the hollowness" of simple abstinence from food. So far as these practical trials on myself go, I would, in view of endurance of excessive fatigue, rather depend on the latent energy of something (to me) far more substantial than cocaine. It should be remembered the above is practically overstimulation—the sudden thrust of an excess—upon an organization unused to any stupeficient, whether in the form of opium, tobacco, or alcohol. 3i of four per cent. solution contains about gr. $2\frac{1}{2}$, xxiii of four per cent. solution contains about gr. $\frac{1}{2}$, whilst a handful of leaves, say 3i , only gives up gr. $\frac{1}{10}$ of the alkaloid. The dose by the mouth is gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$.

The rapid sketch I have given must suffice for the most part as indication of the range of usefulness of the drug. I cannot, however, too strongly urge that its anæsthetic effects are purely local, even that upon the nerve-trunk and the slight or negative effect upon the skin coming under this category, and that to secure the best results sufficient care must be exercised to convey the solution to the part indicated. It has been used successfully in operations upon the inner surface of eyelids and tear-passages, and on the eyeball in iridectomy, operations for cataract and glaucoma, etc., and even in enucleation. As a number of failures to induce complete loss of sensibility in the last mentioned use have been reported, allow me to add emphasis to my caution by a quotation of Turnbull's *modus operandi* (*Med. and Surg. Reporter*, November 9, 1884): "In a case of enucleation 2 drops of four per cent. solution of cocaine were instilled every three minutes until eight had been used. When Tenon's capsule was

opened, 1 drop of the solution was allowed to flow into the cut. As each tendon was caught up with the hook a drop fell upon it, and the successive tenotomies, each being preceded by a drop, were made at deliberate intervals. The large blunt-pointed scissors, curved on the flat, were next introduced from the nasal side, and with these in position, after thorough sponging, two or three large drops were so instilled as to flow down the blades, one on each side of the optic nerve as a guide. After waiting a minute, the optic, and with it the ciliary nerves, were severed at one stroke, during which the patient remained entirely quiet. There was less than the usual bleeding, and the healing was undisturbed" (Knapp, p. 26).

Outside of ophthalmology, the field is too extended for individual mention. The journals are replete with notes of cases. Some of the less obvious may be given a passing notice. Thus it finds a favorable application in acute otitis media, in removal of small tumors from various parts of the body, and in the lancing of abscesses. Papilloma of the larynx has been successfully removed with its aid, and operations for fistula in ano, vesico-vaginal fistulæ, and lacerated cervix and perineum have been painlessly performed. Dr. C. H. Thomas, of Philadelphia, claims for it the property of reducing inflammation and engorgement of the tissues in diseases of the endometrium (*Am. Journ. Obstet.*, February, 1886).

Circumcision has also been equally satisfactorily done. The mucous surfaces of the prepuce being first carefully cleansed, then slightly moistened, cocaine in powder is dusted on the surface to obviate pain from first stab of the needle, then hypodermics are given (four per cent. solution), 4 minims on dorsum, near frænum, and on each side (16 minims in all). Even an hydatid tumor of the liver has been opened and emptied under cocaine. In this case the patient was 72 years old, and ether was contraindicated by his general condition. Four per cent. solution was rubbed in for half an hour. Skin and subcutaneous fat passed with trivial pain. Fresh applications were necessary as muscles and peritoneum were reached. The operation lasted an hour. No shock and no peritonitis followed. Patient died on twenty-second day after operation, from inanition due to complete absence of bile from the alimentary canal. Soon after eating, the flow of bile from the sac was very great. The autopsy showed no peritonitis.

The dysphagia and violent irritative cough

of laryngeal phthisis have been ameliorated, thus giving us some control not hitherto possessed over these distressing symptoms, though not the complete mastery we were led to hope for. The relief of cutting pains of first stage of labor has followed its application to tissues about the cervix, whilst its endermic use has enabled the painless passage of the head through the ostium vaginae. In senile gangrene its application has relieved the severe pains of that dangerous disease. In confirmation of the action upon the nerve-trunk, Dr. Nash, of New York, injected xxviii of four per cent. solution as near as possible in the infra-orbital foramen, reached through the mucous membrane of the mouth. There was complete anaesthesia of the left half of the upper lip and cheek, on both the skin and mucous surfaces, also a portion of the nose and left side of lower border of the gums, from the median line beyond the bicuspid. He inserted a gum wedge very firmly, causing no pain, and excavated and filled the tooth without giving the patient a sensation of pain, although before the injection the tooth was exquisitely sensitive. A similar result followed injection of 8 minims into infra-dental nerve at point of entrance into ramus of jaw. Messrs. Randolph and Dixon have used strong nitric acid saturated with cocaine as a painless escharotic, which may well be of service in venereal practice. An epithelioma has been treated by arsenical paste, the patient being readily able to endure its caustic action by reason of the remedy.

In leaving this part of my subject, I trust it has been well noted that the drug is not too rapid in its action, and that time should be given between successive applications for the preceding to take effect.

Of cocaine when taken by the stomach I have little to say, my own experience beyond operative measures and for irritative cough being designedly limited to its local use in hay-fever, of which I have spoken elsewhere. The many wines of coca are so bolstered with alcohol as to render it difficult to determine to which the effects (*if any*) are due. The fluid extract is reported to be a valuable adjunct for treatment of the morphine habit, but is not a specific. Cocaine is said to dilate the pupil contracted by morphine, and to allay the morphine hunger. In chronic alcoholism it is also serviceable, though a case reported to the Mississippi Valley Association of its treatment by gr. $\frac{1}{2}$ hypodermically was followed by cocaine habit, the patient using gr. x daily.

The irritation when used hypodermically

is not greater than that from morphine, xxx to xv (four per cent. solution) usually causing no constitutional symptoms beyond vertigo, pallor, and dilatation of pupil, whilst larger ones may cause nausea and vomiting also. The effect of the drug lasts according to the strength of solution and number and efficiency of applications.

It would not be strange in a remedy of such marked peripheric force, if investigation would show a further centric impression than is at present accorded to it, but of this additional observation is necessary. In the later journals reports of ill effects have not failed to appear. It is said exfoliation of the corneal epithelium, vesicular keratitis lasting several weeks, and panophthalmitis have succeeded its application. In other cases, general intoxication, nausea, and vomiting, lasting an entire day, stumbling gait, syncope (cerebral anaemia?), pallor and sweating, loss of consciousness, and convulsions are said to have ensued.

In one case that came under my own notice the use of upwards of f3i (four per cent.) applied to the nostrils was followed by a disagreeable dyspnoea (overstimulation of respiratory centres) lasting a considerable time.

Whilst it is by no means established that all the above are surely chargeable to the drug, there is enough to make us watchful and by no means indifferent to the possible results, even though the more grave effects may be exceptional, may be from excessive quantity or from individual idiosyncrasy.

It may be worth mentioning in passing that the case of poisoning from gr. x hypodermically (*Med. Record*, November, 1885), resembling morphine-poisoning, is not free from suspicion, owing to the large amounts of alcoholic stimulus injected.

A number of instances of addition to the excessive employment of the alkaloid have already been reported in our own country. Whilst we are not justified in jumping at any conclusion upon the evidence thus far presented, we are indeed urged the more to greater caution in its prescription both for others and ourselves, with added emphasis to the old adage, "A man his own lawyer has a fool for his client."

1523 GREEN STREET.

A CASE OF TYPHOID FEVER COMPLICATED WITH SEPTICÆMIA.

BY K. MCKINNON, M.D., PLEASANT HILL, ALA.

MISS A. B., a maiden lady, aged 54, a dress-maker, who had been suffering more or less from dyspepsia, biliousness, and constipation for several years, complained of headache and fever the 9th of July, 1885. She first took some cathartic medicine, but the headache and fever continuing from day to day, I was called to see her the fifth day of her illness. I prescribed a cathartic and quinine to be taken two days, with the view of breaking the fever, thinking that possibly it might be of malarial origin. I visited her again the seventh day of her fever in the afternoon, and found her pulse 80, temperature 103°, and tongue covered with a thin white fur, still complaining of headache and loss of appetite. The cathartic had acted sufficiently, but the quinine had had no effect on the fever. I diagnosed the case to be typhoid fever. As I had nothing better, I prescribed 15-grain doses of salicylate of sodium as an antipyretic every two hours, until the temperature would be brought down to about 100°, when it was to be discontinued, and again given when the temperature rose above 102°. Sponging with cool water was also used at times to promote comfort and to keep down heat of the skin. The salicylate produced so much nausea that, after two days' use, it was discontinued (about six doses were given); the sponging was still used when necessary to moderate the temperature. Enemata of cool water were used once or twice a day to cool the bowels and keep them acting, as they were more inclined to constipation than diarrhoea.

During the ten or twelve days following there was very little change in her general symptoms. The pulse was from 80 to 86, and temperature from 100° to 103°. She took food with a fair appetite about every four hours, either milk or meat broths, and a half-ounce of whiskey before meals. I gave her little medicine. Part of the time I gave her 10 or 12 drops of oil of turpentine, or drachm doses of spirits of nitre every four hours. There was no tenderness in the bowels and little tympanitis. The appearance of the tongue improved, and became almost normal, except a little flabby.

She slept the greater part of every night, and took naps through the day. Her strength

was tolerably well preserved. She could get out of and into bed with a little assistance.

On the eighteenth day of the fever, at 7 o'clock P.M., her pulse was 86 and temperature 101°. Her general condition was about the same as it had been for a week past. I did not see her the following day, but visited her at 9 o'clock A.M. the next, the twentieth day of the fever. I discovered at once a change for the worse. I found her pulse 90, temperature 103°. Her nurse informed me that her fever had been somewhat higher the preceding day than it had been for several days, and she slept less than usual the night before. I tried the salicylate of sodium again, together with the sponging, to reduce the increasing temperature. She had been using ice and iced water for several days. The same day at 3 o'clock P.M. I was hastily called to see her, and found her suffering from greatly increased fever, with violent rigors, pulse 125, and temperature 105°.

The fever gradually subsided that evening, followed by a free perspiration. I gave quinine the two following days, and there was no more return of the rigors, but there was a very marked change for the worse in all her symptoms. The day after the pulse went down to 90, but gradually increased in frequency and lost in strength. The temperature also lowered, but during the following week it fluctuated from day to day, sometimes as high as 103½° and then down to 100°, but with no regularity. An aperient was given the evening the rigors occurred, and the bowels were freely moved. The passages after this became very offensive, notwithstanding the bowels were kept freely moving by means of aperients and enemata. I gave her resorcin as an antiseptic for three days without any effect in correcting the offensive smell of the passages. From the evening she had the rigors, subsultus was so violent and constant as to greatly interfere with her resting. She had none of it before the relapse. Her tongue became coated with a brown fur; sordes accumulated on her teeth and lips. There was complete anorexia. Small quantities of food were retained, but the whiskey, brandy, and medicines were rejected. The stomach became almost intolerant of everything. Her strength rapidly failed; her jaw dropped when dozing; there was great apathy and dulness in her expression, and marked lethargy. I noticed that she eructated occasionally before the relapse, but frequently afterwards. The bowels became quite tympanitic, without much tenderness. The skin

was constantly moist, but no free perspiration until a day or two before death, which occurred on the twenty-eighth day of the fever.

Instead of giving the daily symptoms of this case, I have thought it best to group them, as they were very uniform, into the two periods, before and after the relapse. I wish to call special attention to the sudden and unexpected symptoms developed on the twentieth day of the fever from a condition indicating no great danger to one of the gravest without any very obvious cause. She was carefully nursed. I do not believe the exacerbation of fever and violent rigors, which occurred on the twentieth day of the fever, were caused by malarial poison. She had been living for several years in this village, where there is so little malaria that it is a very rare thing for any one living here to have a mild attack of intermittent fever. How, then, are we to account for this exacerbation and relapse? In my opinion it was a case of septicæmia, caused by septic matter in the bowels being absorbed into the system through the denuded or raw surfaces of the enteric glands after they had cast off their sloughs in the course of the typhoid disease. Her food was almost entirely of milk and meat broths, taken at regular intervals, in such quantity as it was thought she could digest. The probability is that she took more than was digested, and that it was retained in the bowels too long, until septic changes supervened, and the poison there developed was then absorbed into the system. I have been in the habit of giving iodine and carbolic acid in typhoid fever for their antiseptic properties, but did not in this case. I now think that if I had given some antiseptic, and a few doses of castor oil between the tenth and twentieth days of the fever, to clear out the bowels, the termination of the case might have been different. Her bowels were inclined to constipation before the relapse, but afterwards were easily moved. At no time was there much diarrhœa.

In the spring of 1853 I treated a case of pyæmia in a young man just convalescing from a violent attack of typhoid fever. It was manifested by the formation of cold abscesses in the subcutaneous cellular tissues in different parts of the body. That case of pyæmia and this with well-marked symptoms of septicæmia are the only ones of their kind that have come under my observation in a regular practice of thirty-four years, in which time I have had a fair proportion of typhoid fever to treat. No doubt many patients were affected with the poison of septicæmia in a mild de-

gree, or the symptoms of it were so obscured by other complications that they were not duly appreciated in the treatment.

It is only of late years that autoseptic poisons have been carefully studied, so that it is not surprising to find so little in the books about them. But now that they are known to exist, though their true character may not yet be satisfactorily ascertained, the important consideration with the practitioner is how to prevent them. The indications to prevent this particular accident or complication would seem to be to keep the bowels gently moving by aperients when there is a tendency to constipation, and to use antiseptics to prevent or to correct septic changes taking place in the contents of the bowels.

NOTES FROM GENERAL PRACTICE.

BY FRANCIS L. HAYNES, M.D., PHILADELPHIA.

II. AN EASY METHOD OF PLUGGING THE POSTERIOR NARES.

A PIECE of fine silver wire, fifteen inches long, is doubled; the closed end is left rounded and the free ends are neatly twisted together. A slight bend is given to the bar thus formed. A stout thread, twenty-five inches long, is tied to the twisted end.

The patient sits in front of the physician, his head thrown slightly backwards, so as to make the passage of the wire into the pharynx more easy. The parts are illuminated by the forehead mirror, unless a good supply of daylight can be used.

The blunt end of the wire (with the concave aspect downwards) is pushed along the floor of the nasal passage, and through the naso-pharynx until it is seen in the pharynx, the patient assisting by holding the tongue with a depressor. The end of the wire in the pharynx is now grasped by Gross's polypus forceps, the fingers, or anything else convenient, and pulled through the mouth. The thread is cut, and a piece of absorbent cotton, slightly compressed, large enough to fill the posterior nares, is tied to it, about ten inches from its mouth end. The tampon is pulled into position by drawing on the nasal end of the thread. The plug is generally caught by the edge of the soft palate, but can easily be guided past it by the finger. The nasal and mouth ends of the thread are tied together, so as to form a loop, which is hung over the nearest ear, so that it may be out of the road.

In a recent case, not happening to have any wire with me, I managed very well with a piece of straw from a broom, one end of which was bent over into a rounded loop and tied thus, so that it might not catch in the mucous membrane.

The nostril is then obstructed, if necessary, by means of a mass of cotton, which will readily stay in place without tying.

If it can be avoided, the tampon should not be left in place more than three hours, as its presence is exceedingly uncomfortable to the patient, whose strength rapidly fails under its use. By carefully noting which nostril pours forth the greatest quantity of blood, one side may generally be left patent, to the great advantage of the sufferer.

I generally allow the patient to remove the plugs himself, and he is requested to do this gradually, first the anterior, and fifteen minutes after the posterior plug, by gently pulling on the string issuing from the mouth.

The removal is timed so that it will precede by a short interval a professional visit, so that the physician may determine whether it is necessary to renew the plugs.

In cases of intermittent nose-bleeding in anæmic subjects, the thread lying in the passage may be renewed by tying a fresh piece to the one that has become foul, and thus left for twenty-four hours or more, ready for a fresh attack. The presence of the thread is but slightly inconvenient, not interfering with eating or drinking. An intelligent attendant can readily be taught to draw the plugs into position, and during the intermission the patient can enjoy the luxury of breathing through his nose.

This procedure may be executed with so much ease and rapidity that there is less excuse for the prolonged presence of the plug than when the barbarous instrument known as Bellocq's canula is used.

The plan of packing the nasal cavity (suggested by an eminent authority), by a long piece of lint pushed in from the front, I have found inefficient, difficult, and very uncomfortable to the patient. The removal of a plug thus placed is almost sure to provoke fresh bleeding.

An additional advantage is that the nasal passage can be traversed by the wire, notwithstanding extreme deviation of the septum.

This little operation should be preceded by the free use of cocaine spray to nose and pharynx, which will entirely prevent gagging, and it is to be hoped will prove by further experience to be in itself a valuable hæmostatic.

1924 E. CUMBERLAND STREET.

MINERAL WATERS OF MT. CLEMENS, MICH., IN LEUCORRHOEA.

BY A. N. SHOTWELL, M.D., MT. CLEMENS, MICH.

LOOKING over all authors at hand, I find American authors, with but few exceptions, do not speak of mineral waters in leucorrhœa. Most all mention sea-bathing, but put more stress on some new mode of applying medicines.

So it has come to the pass that one is almost unable to pick up a medical journal without finding some new advertisement for pessaries, syringes, etc., for the quick and radical cure of all female troubles.

After nearly two years and a half experience at this spring, I find that a large per cent. of the females who come here are suffering with this complaint,—nearly eighty per cent. of all females between the ages of sixteen and fifty years.

I think leucorrhœa is usually spoken of as a symptom and not as a disease, yet nearly all treat it as a disease by various astringents, etc. So it has come to be the fashion to probe, burn, and dilate the poor woman's womb from the time she is old enough until she dies.

I cannot help quoting a medical friend who for years had a large female practice, who said, "Let the poor womb alone and build up the general health, and your patients will be the better for it."

This I have found only too true in practice.

Of the various modes of treatment which have been brought before the profession in the last few years, many have proven useless in a great many cases.

Some through false modesty, some from lack of means to go to a specialist, some too remote, and others from failure to get any relief, have gone through life, a curse to themselves and those who have had to live with them, or have become victims of patent medicines.

Exciting causes seem to be all those disorders which cause stagnation in the proper circulation of the blood, as heart- and lung-diseases, chronic constipation, etc. Direct irritation, such as sexual excess, pessaries, excessive dancing, skating until warm and then sitting in draughts, tight lacing, bad air of any kind, general debility of the system, as well as morbid conditions in general.

The symptoms of an acute attack are ushered in by slight fever, drawing pains in the small of the back and inguinal region, with a feeling of fulness in the pelvis. Ex-

ternal pressure upon the lower part of abdomen is painful, there is more or less fever, and after three or four days the patient observes a discharge from the genitals, which at first is transparent and sticky, staining the linen grayish, by and by becoming opaque, and more or less purulent. In the further course of eight or ten days the fever gradually subsides, and after that the discharge diminishes until it finally ceases, or runs into a chronic form, of which we will now have to treat.

Patients will now run from the above into a state where there will be clots of a gelatinous mass constantly passed. This is characteristic of uterine catarrh. The discharge will sometimes collect in the neck of the uterus, and be expelled with pain, constituting uterine colic. In time it may affect the monthly period in various ways, in the shape of dysmenorrhœa, amenorrhœa, metrorrhagia, neuralgia, hysteria, and insanity. Or we may have it take another form in the shape of excoriation and pruritus, etc., which will make life a burden. We find it in some showing itself in an irritable temper, general weakness, patient unable to take any exercise without extreme fatigue; any labor, such as light household duties, will cause extreme fatigue; they will complain all the time; life becomes a burden; so irritable will they become, that it is a fruitful source of divorces.

Looking over the various works on female diseases, I find no mention of saline sulphurwaters in chronic leucorrhœa, with the exception of Walton,—"Mineral Waters of United States and Canada," a very excellent work.

I find most all American authors speak of sea-bathing, mountain air, quiet, etc., but not any mention of saline sulphur-bath in any form. Most European authors speak of some of the German spas.

Now, after an experience of upwards of two years here, I find the most decided benefit in all forms of congestive, catarrhal, and various kinds of leucorrhœa.

CASE I.—Miss E., æt. 32, had been suffering for some time with pain and soreness and general weakness, with profuse leucorrhœa, in character white and gelatinous discharge at each period; suffered a great deal of pain, so much so I was called in, May, 1884, and July, 1884, to prescribe then and afterwards for the relief of pain. I recommended baths at 98° F. Only took two or three, as they gave immediate relief.

In February of the following year she had malarial fever, and then commenced the baths

regularly, and took twenty, and since that time has not had any trouble, has gained flesh, and has no more pain at the monthly periods, and is in perfect health to date.

CASE II.—Mrs. X., æt. 35, mother of two children, contracted gonorrhœa three months before I first saw her. When I first made an examination, in July, 1885, the discharge was so profuse that it would drop from the vagina while on the street. On examination I found extensive ulceration of the vagina and os. I recommended baths at 98° to 100° F. strength, sp. gr. 1.033, with hot mineral-water injections twice daily, and I used daily applications of a strong solution of bichlor. mercury. After taking twenty-five baths she was entirely restored, and returned home.

CASE III.—Miss Y., æt. 18, came, complaining of a profuse discharge. On examination I found it mostly confined to the external genitals and urethral orifice. Recommended baths, with injections, and in this as well as the above case I used local applications of bichlorid. mercury. After eight baths she went home well.

CASE IV.—Mrs. H. came for the benefit of the baths in gouty rheumatism of several years' standing. She was of a peculiar nervous temperament coupled with bilious condition, and there was a great deal of deposit in and around the joints of both hands; she also had a profuse leucorrhœa, which she had given up in despair of ever getting over, so the fact was not mentioned when she came. Prescribed baths for rheumatism at a temperature 100° to 105° F. After taking twenty-eight baths both troubles were well, and she returned home.

CASE V.—Mrs. A. came in February, 1886, with her husband, who was suffering from rheumatism; she also was suffering a little herself, so she thought she would take a few baths. She had chronic leucorrhœa for ten years, and had consulted physicians of New York City and Rochester, and had undergone systematic treatment without any benefit. After taking eighteen baths had no more trouble. Did not take any medicine of any kind, nor was there any other treatment.

CASE VI.—Miss G., æt. 18, came under treatment in March, 1886; complained of excruciating pain in ovarian region of left side, with numbness of limbs, bearing-down pain; said she felt as if everything was falling out of her. Had profuse leucorrhœa, and so much soreness that I was unable to use a speculum. Upon digital examination I found a great deal of displacement with enlarge-

ment of os. I kept her in bed and used hot mineral-water injections. In four or five days the soreness had so far subsided that I was then able to make a thorough examination, when I found a great deal of inflammation with ulceration of os and with great tenderness of ovaries.

I used locally iodoform and subnitrate of bismuth and supported her uterus with a pessary, and used baths at temperature 101° F., for twenty minutes; two baths a week. Now at present writing patient has no further trouble, except slight leucorrhœa when she takes cold, but it only lasts for a few days at a time, and she is no longer obliged to wear a pessary.

CASE VII.—Mrs. W., æt. 29, mother of two children, presented herself April 24, 1886. I found her very much prostrated, with the following history: About four years ago she had a discharge from the vagina; had no examination, and did not know what it was. After a short time a copper-colored eruption came on the breast and limbs; following that in a short time was great deal of pain in limbs below the knees, profuse discharge, with great amount of pain at each period. When I made an examination I found the cervix greatly enlarged, lateral rupture with extensive ulceration, which would bleed profusely from a mere touch. I commenced treatment with baths with temperature ranging from 96° F.; sp. gr. 1032. Patient only bathed every other day. After commencing baths the discharge increased for a time. In the mean time I used locally iodoform and 10-grain doses of potassic iodide five times daily. After taking twenty-eight baths patient was well enough to go home, and continued medicine internally with no need of any further treatment.

CASE VIII.—Mrs. R., æt. 30, came May 20, 1886; complained of extreme weakness, pain in chest and stomach. Pain in stomach was so severe that she could not do any work, pains coming on about every seven days, but she never was free from it, and at each monthly period was always confined to her bed from two to five days. As the pain was so much worse in the stomach at these times, I looked upon it as a case of sympathetic irritation. On examination, I found chronic vaginitis and a great deal of ulceration of os with enlargement, with great deal of discharge. Internal measurement of uterus was three inches, otherwise organ was in proper position; there was a good deal of ovarian tenderness.

I commenced treatment by the application

of iodoform internally to uterus, and to the vagina subnitrate of bismuth and glycerin, and baths at temperature of 98° F., sp. gr. 1033, for one week, then increased to one-half strength, sp. gr. 1066, and now is taking, third week, full strength, 1132. She has no more pain in chest and has but little discharge, and from an anæmic woman she has changed to one with red cheeks and has gained flesh, and is well and cheerful and has returned home.

ACTION OF RHODAN.

We abstract from *Schmidt's Jahrbücher*, April, 1886, p. 133, the results of DR. PASCHKIS's experiments on rhodan soda, a rarely used but apparently powerful drug.

In frogs the injection of 5 c.c. of a twenty per cent. solution causes tetanic convulsions of a long duration, recalling the effects of strychnine application. Respiration and heart-beat stop. If 3 drops of a three per cent. solution of the drug are placed upon the exposed heart of a frog, the pulse sinks gradually from 46 to 14 beats per minute, until after the lapse of twenty-five minutes cardiac action is arrested, which can be recovered, however, by the aid of atropine. The action of the drug proceeds from the spinal cord. In mammals the drug causes an increased reflex excitability, becoming ultimately tetanic in nature, but differing from the strychnine tetanus by proceeding more slowly. Injected into the carotid artery or jugular vein of rabbits and dogs, rhodan produces a considerable and lasting increase of the arterial pressure. Peristaltic intestinal action becomes also intensified by the drug, and, as observed in the rabbit, urination increases likewise.

SUBCUTANEOUS INJECTIONS OF SALICYLATE OF COCAINE IN ASTHMA.

PROF. MOSLER, of Greifswald (Prussian University), details in the *Deutsche Med. Woch.*, 1886, No. 11, a number of cases of asthma which were cured by the hypodermic administration of salicylate of cocaine. Bromide of ammonium given in the ordinary doses together with the injections appeared to intensify their usefulness. The paroxysms were in nearly every instance lessened and shortened, if not entirely removed. It is noteworthy that after one hypodermic injection of the cocaine salt ($\frac{1}{4}$ grain) rigors and vertigo, which lasted for three-quarters of an hour, set in.

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Leading Articles.

PERFORATIVE PERITONITIS.

ALTHOUGH correct diagnosis is of immense importance in the treatment of any disease, in but few is it as vital as in perforative peritonitis. If ever the appendix vermiformis be opened the chances of recovery are greatly increased by surgical interference, whereas to cut into an inflamed peritoneum, when the bowels were sound, would greatly enhance the risk of a fatal issue. Diagnosis treads here so closely upon the heels of treatment, or, to speak more accurately, treatment follows so closely in the footsteps of diagnosis, that we make no apology for calling the attention of our readers to the subject. In a very elaborate paper, read at the recent meeting of the Association of American Physicians by Prof. Fitz, but not yet published, the advantage of early laparotomy in properly-selected cases was plainly shown, but the selection—i.e., the diagnosis of the cases—offers the greatest difficulty. Abrupt suddenness of onset sometimes aids us, but not always, for an appendicitis may steal slowly upon the patient, and an idiopathic peritonitis may develop very rapidly. A rapidly-developed localized tumor in the ileo-cæcal region, preceded by evi-

dences of local inflammation, is sufficiently characteristic to warrant surgical exploration, but owing to the tendency of the pus to drain downward, and the inflammation to follow it into the pelvic character, no distinct tumor may result from a perforation of the appendix.

When tympanitis in a general peritonitis is excessive, masking hepatic and splenic dullness, pushing out beyond the ribs and encroaching on the lungs by thrusting upward the diaphragm so as to interfere with the breathing, then suspicion of gas in the peritoneal cavity should be aroused. In such cases it becomes essential to determine whether the gas is within the bowels or on their outside. Various tests have been proposed from time to time for the purpose. But in a recent article in the *Deutsches Archiv f. Klin. Med.*, Dr. E. Wagner shows that almost all of them are uncertain, if not valueless. The fistula rule of Tschudnochowski can rarely be heard when there is perforation, because very rarely is there a to and fro rush of air through the intestinal fistula in response to the respiratory movements of the diaphragm. Absolute clearness of percussion, dullness over the liver, seem only to be at all diagnostic of air in the peritoneal cavity when it is known to have been suddenly developed. Changes in the percussion note accompanying corresponding alterations of the body, when distinctly obtained are characteristic of the conjoint existence of air and fluid in the peritoneal sac; but a patient with a furious acute peritonitis is not to be rolled about and thumped as though he were a beer-barrel, or even as though he had a pleurisy. Usually the sign cannot be made out. In regard to succussion, even the thought of attempting to obtain it has a tincture of brutality.

The one diagnostic sign, according to E. Wagner, is the complete absence of any intestinal peristalsis revealed by palpation and auscultation of the abdomen. When there is gas in the peritoneal sac, it collects in the upper portions of the abdomen, so that when the patient lies upon his back, it interposes between the bowels and the listening ear a stratum of badly-conducting substance. Where, on the other hand, the gas is within the gut, the folds of the intestines are forced into intimate contact with the abdominal walls, and every movement of these walls is transmitted.

Fortunately, in doubtful cases, the careful pushing of a fine, not too short, trochar into the abdomen will enable us to come to a decision. If foul-smelling gas, or liquid having

a fæcal odor, escape from the trochar, the case is plainly one of perforation, provided care has been exercised not to perforate the intestine. When the trochar is surgically clean and small enough, no harm can come of this exploratory puncture, so that it is a safe and most important procedure.

PASTEUR AND HIS INSTITUTE.

HISTORY teaches that the world's leaders in thought and science, its greatest discoverers, in brief, all men who strove most for the welfare and advance of the human race, have perpetually been met with scepticism, if not with derision and open abuse. In the deadly conium-draught of Socrates, the ignominious fetters of Columbus and Galileo, and in the fierce resistance against the reformers, we recognize alike this principle of constant and singular antagonism of the world against the doctrines and discoveries of its greatest minds. This principle of antagonism, which also applies to the medical sphere, is, however deplorable if carried to extremes, still not wholly exempt from salutary aspects, for it represents a firm check for the charlatans of science and the pseudo-benefactors of mankind, while against doctrines of actual truth and advance all resistance must in time prove vain. To maintain a dignified reserve in face of announced innovations or discoveries is well becoming to the laborers in the field of science, but an opposition persisted in after theories have become facts which can be practically demonstrated, or after discoveries have proven their actuality by crucial tests, has no claim to existence.

In medicine, the doctrines of Jenner in the last century, and of Koch and Pasteur in our days, have in their turn been more severely fought and objected to than the teachings of any other medical men of recent times; still, it can with safety be asserted at the present day that no amount nor degree of resistance will ever destroy the scientific structures erected by these men. The merits of Jenner and Koch are no longer a subject of discussion with the profession, at least with the vast majority of its authoritative elements, and Pasteur alone is still before the professional forum to receive its judgment. Inquiring into the antecedents of Pasteur, we find him to be no *homo novus* in the field of practically applied pathological researches; his successful labors in regard to the treatment of milzbrand, chicken-cholera, and ery-

sipelas of hogs have spread his fame far beyond the borders of his native country. No wonder, then, that his memorable announcement before the Academy on the 26th of October, 1885, of having found a method of preventing hydrophobia went far in enhancing his already established reputation and in popularizing his name all over the world. Joseph Meister, the young Alsatian, who on the 4th of July, 1885, had been bitten by a dog, the rabid character of which had been officially ascertained, attained complete immunity from the dreaded consequences of the accident. Jupille, the shepherd-boy, on whom Pasteur tested his preventive method next, was equally fortunate as Meister. No sooner had the news of Pasteur's auspicious discovery been published, when from all parts of Europe, and even from America, numerous persons who had been bitten by mad animals, chiefly dogs, sped to Paris, in order to receive from the hands of Pasteur protection and immunity. Let us without a commentary now follow up the facts as they gradually developed themselves.

On the 1st of March, 1886, Pasteur communicated to the Academy his further observations and results obtained by his preventive treatment of hydrophobia. From July, 1885, to February, 1886, three hundred and fifty persons, bitten by mad dogs, were vaccinated by Pasteur and his assistant, Grancher. Pasteur remarked in the course of his address that although his laboratory had for the past five years been devoted to the study of rabies, and had become, as it were, the centre of all information and observation pertaining to this affection, he shared the universal surprise in finding how large the number of persons bitten by mad dogs actually was. The ignorance of this fact can in Pasteur's judgment be referred to two principal causes. As long as hydrophobia was regarded as an incurable disease, the rabid character of the dog was usually kept secret from the bitten person in the assumption that this knowledge would create a certain unavoidable predisposition for the affection in the person. Besides, in the case of working-people it was feared that if the fact of the bite should become known to the employers and fellow-workers, the bitten person would lose his position, on the ground that he might become dangerous at any moment. This latter view is of course an erroneous one, as hydrophobic subjects are only dangerous during the last stages of the affection.

In order to obtain definite and convincing

results, Pasteur resorted to very stringent precautions. In the first place he demanded invariably a certificate of a physician or a veterinary surgeon testifying to the rabid nature of the dog. In some exceptional instances only Pasteur was obliged to dispense with this requisite. Furthermore, no patient was admitted for treatment in whom the skin did not give distinct evidences of having been pierced by the teeth of the animal. In several cases Pasteur could himself prove the rabies of the animal by inoculating nervous tissue taken from the killed animals into rabbits or guinea-pigs.

Of all persons hitherto vaccinated, nearly one-half have passed the period in which the symptoms of hydrophobia as a rule manifest themselves (viz., forty to sixty days) without presenting any morbid appearances. Of the cases as reported upon to the Academy by Pasteur, one deserves special mention, as it indicates the success of Pasteur's method even under particularly aggravating circumstances. A boy 8 years of age, Jullion by name, being attacked on the 30th of November, 1885, by a mad dog, and beginning to cry, was bitten by the dog, the lower jaw of which entered the open mouth of the boy. The result of the bite was a deep laceration of the boy's upper lip, gums, and cheeks. Cauterization was impossible; the rabid character of the dog was promptly ascertained by a Parisian veterinary surgeon. The boy was presented to Pasteur for treatment, and at present enjoys perfect health. In one case only death ensued after treatment. Louise Pelletier, 10 years of age, was bitten on the 3d of October, 1885, by a powerful shepherd dog, and not until after the expiration of thirty-seven days was sent to Pasteur for treatment, with deep wounds covered with a bloody purulent secretion in the head and shoulder. Though aware of the uselessness of treatment in a case presenting itself five weeks after the bite, and under such adverse conditions, Pasteur, for humanity's sake, admitted the girl for treatment. On the 3d of December the girl perished, as predicted by Pasteur, under symptoms of hydrophobia.

Pasteur's treatment appears in no instance of the three hundred and fifty patients vaccinated, to have given rise to any untoward symptoms. No abscess nor phlegmonous inflammation has ever been observed as resulting from the vaccination; in some instances only a slight œdematous reddening showed itself.

We are now to decide the vitally important

question whether or not Pasteur's preventive treatment of hydrophobia is to be regarded as a safe protection against the dreaded affection. Before answering this query, let us see how Pasteur's method and results are received in other quarters. The French press, both the professional and secular, as might be presumed, is unanimous in endorsing Pasteur's practice as the *par excellence* achievement of medicine of the century. But knowing the sanguine propensities of the French nation in matters apt to verify the famous *nous marchons à la tête de la civilisation*, we take the verdict of the French press *cum grano salis*, and turn our attention to the country of severe and critical judgment, Germany. When the subject of the "Institute Pasteur" came up for discussion in the German Parliament, the minister of state, V. Gossler, appointed Virchow to report on this matter. "The results of Pasteur's practice," quoth the Nestor of pathology, "are most gratifying, and while the time has not yet come to deliver a final judgment on the matter, it deserves our fullest attention and support."

The Austrian press is divided in the matter, though after the return of Prof. v. Fritsch from Paris and his commendation of Pasteur's work, the Viennese medical journals support Pasteur. Russia, England, and other countries have likewise sent medical missionaries to Paris in order to study Pasteur's method.

Viewed as a whole, the competent voices of the profession, while still observing a certain reserve, do not hesitate to acknowledge that the results hitherto obtained by Pasteur justify the most favorable anticipations. We are undoubtedly safe in following the *aurea mediocritas* as prescribed by the judgment of Virchow. While regarding the work of Pasteur with the interest due to both the therapeutic progress and the practical benefits it embodies, we wish to defer our final judgment in the matter to a later date.

The establishment of an institute in Paris, as suggested by the wisdom and humanity of Pasteur, in which not only all persons imperilled by hydrophobia could be treated and cared for, but which at the same time would be a focus for all pathological investigations basing on the vaccination principle, has, alongside of most liberal financial contributions, excited a good deal of adverse criticism regarding Pasteur and his work. There are those who in fierce zealotry do not hesitate to call one of the greatest pathologists of all ages a fraud and a charlatan, and refuse all support, moral and material, to the "Institute

Pasteur." Nevertheless, the "Institute Pasteur" will be erected most certainly, thanks to the liberality of Freycinet, the French secretary of the interior, and the most generous contributions from all parts of the world that are being sent to Paris. The high objects aimed at, its liberal and international character, and the competency and integrity of its chief, insure for the "Institute Pasteur" a highly auspicious and lasting prosperity.

CALOMEL AS A DIURETIC.

DR. ERNST JENDRÁSSIK, assistant to Prof. Wagner, of Budapest, has created a genuine surprise by his exposition of a virtue residing in calomel, which has hitherto remained wholly unknown (*Deutsches Archiv für Klinische Medizin*, April 22, 1886). In fact, though some elder writers recommend calomel in dropsy, and also allude to a certain diuretic action of the drug, this property is not even mentioned by any of the text-books at present in use. Wherever calomel is now being used in the treatment of dropsy, its drastic action alone is taken into consideration.

Being called upon some two years before to treat a case of dropsy, in view of the wholly obscure causation of the affection and the strong suspicion of a syphilitic basis, our author instituted a mercurial treatment, beginning with inunctions of blue ointment, soon followed by small doses of calomel in combination with jalap. Scarcely two days had elapsed after the calomel treatment when the urine was voided in such quantities that the dropsical infiltration completely disappeared in a few days. A relapse of the dropsy a couple of weeks later was with equal promptness cured by the exhibition of calomel and jalap. This discovery, of course, led Jendrassik to further researches in dropsical cases, in which the diuretic action of the drug was distinctly established.

Our space, however, prevents us from publishing the clinical records of seven other cases of dropsy, the recovery of which is definitely traced to the powerful diuretic action of calomel.

Calomel was generally given combined with jalap, though this addition is of no importance. Urination increased up to 9500 c.c. in twenty-four hours, the polyuria usually being proportional to the extent of the œdema present. Jendrassik found that 3-grain doses, given three to five times daily, showed the

promptest effects. It is important and interesting to note that the diuretic action of calomel only shows itself simultaneously with the appearance of the symptoms which indicate the absorption of the mercury. The diuresis appears three days after having taken the drug, and persists until the œdema has completely disappeared.

Control experiments proved that in the combination doses of calomel and jalap, the diuretic effects referred alone to the first constituent, as the latter never produced these results when given alone.

The degree of the diuresis was found to be dependent upon two factors,—first, upon the size of the dose ordered; and, second, upon the extent of the dropsy present. It was observed that the diuretic effects proceeded *pari passu* with the manifestations of mercurial absorption, such as metallic taste in the mouth, increased salivation, stomatitis, etc.

Many of the observations of Jendrassik are too interesting to be wholly omitted.

Employing doses of 2 to 3 grains of calomel, he invariably obtained the diuresis, while larger doses, 6 to 7 grains, always failed. Our author justly concludes that in this, as in other instances, the effects of a medication depend not upon the amount of medicine ingested but upon the amount absorbed. In the instance of calomel, larger doses provoke diarrhœa, and thus to a large extent prevent the absorption of the drug. But little time appeared to intervene between the taking of calomel and the appearance of its diuretic effects. If given in the proper dose, the diuresis appeared usually within a couple of days. At the same time, it was noted that a certain quantity only of calomel was required to effect the diuresis, and that any further surplus was wholly ineffectual, especially when polyuria had already set in.

The author can give no clue to the manner in which the diuretic action of calomel in dropsy is effected, since neither the heart nor the kidneys are directly influenced. Experiments made with calomel (and also with jalap) on healthy individuals remained wholly negative; stomatitis and salivation set in, but no polyuria. The same failure was obtained in a case of pleuritic exudation with diminished urination. Still, the hypothesis (as a result of exclusion of other modes) is ventured upon that the primary factor in the diuretic action of calomel is the resorption of the œdematous fluid by the blood.

In high grades of dropsy depending upon

heart-disease, the drug evolves its highest diuretic powers; in cases of slight œdema, in pleurisy, and in the œdema of kidney-disease, the drug fails.

In conclusion, the undesirable after-effects of calomel, such as diarrhœa and stomatitis, are briefly referred to, and means suggested to obviate them. Against the diarrhœa a small dose of opium ($\frac{1}{2}$ grain) acts as a sufficient check, without influencing the diuresis. Stomatitis is to be met by the use of chlorate of potassium given as a gargle, or, if this be insufficient, internally (12 grains daily). We have before in a previous issue (July 15, 1886) alluded to Jendrassik's results, but his recent studies seem to entitle his views as to the diuretic action of calomel to marked attention.

ON STERILIZED HYPODERMIC INJECTION FLUIDS.

THE interesting question of preservation of the solutions destined for hypodermic injections has for a long time occupied the minds of physicians and pharmacists. Various schemes and appliances have been resorted to to arrive at a practical solution of the problem. We mention the distilled aromatic waters, the addition of alcohol, glycerin, and salicylic acid to the medicinal substance. But the fear that these additions could exert a modifying or altering influence upon the injection fluid has always prevented anything like a general adoption of such measures.

Again, the extemporaneous injections which have been proposed from pills, lozenges, or gelatin-cakes, presented the same objectionable features, and never gave clear and pure solutions. Filtration had to be excluded on account of the minute quantity of the liquid needed, which would probably for the greater part be retained on the filter. The ordinary solutions prepared in advance have the great objection of rapidly undergoing a process of decomposition, not to speak of the eventual changes in the concentration of the fluid.

As it is nevertheless a matter of great convenience for the practitioner to dispose of ready-made solutions, which, in cases of urgency, can be administered at once, we are glad to inform our readers that this has been accomplished under strict exclusion of the disadvantages above alluded to.

Two pharmacists have almost simultaneously, but certainly independently of each other, solved this important matter by the adoption of the same principle,—*i.e.*, steriliza-

tion of the fluid. Dr. Friedländer, of Berlin, and M. Limousin, of Paris, will be entitled to equal shares of the credit of this invention, the former having shown his sterilized injection receptacle confidentially to our Berlin correspondent in the latter part of April, 1886, and the latter publishing a description of his "ampoules hypodermiques" on the 15th of April, 1886, in the *Bulletin Général de Thérapeutique*.

Limousin's "ampoules" have the form of a small and somewhat ovoid balloon, terminating in a fine neck. The interior of these receptacles is sterilized by the method of Koch and Pasteur, *viz.*, subjecting it to a temperature of 200° C. Then the medicinal fluid is introduced by placing the point of the neck while warm into the cold liquid, or by injecting the liquid warm by means of a small syringe with a fine nozzle. The receptacle being filled, it is closed by placing its open mouth into the jet of an oxyhydrogen lamp. This procedure insures absolute sterilization of the vessel and its contents, and prevents both physical and chemical changes in the latter. The solvent liquid besides is previously filtered by the Chamberland filter. If the injection is to be made, the receptacle is placed on some supporting article, its neck broken, and the nozzle of the hypodermic syringe introduced. Solutions of morphine and ergotine, which otherwise would have been doomed to a speedy decomposition, have in this manner been preserved intact for a year. In the winter it is advisable to warm the receptacle gently previous to using it, in order to redissolve the crystallized particles of its contents. Limousin credits Dr. Duhomme, president of the Society of Therapeutics of Paris, with the authorship of the idea practically executed by himself.

Dr. Friedländer, intending to exhibit his aseptic solutions at the September meeting of physicians and naturalists at Berlin, has naturally, as yet, avoided giving publicity to the working plan of his process. But, thanks to the courteous liberality shown by this gentleman to the Berlin correspondent of the *Gazette*, we are privileged to familiarize our readers with the essential features of Dr. Friedländer's process.

Though in plan and principle the methods of the German and French chemists present no material deviation, a comparative examination will readily yield the superiority to Friedländer's process. Our correspondent from Berlin describes his *modus operandi* from a personal experience in the laboratory as

follows: Little glass balloons of an equal size, with an elongated neck and a somewhat flattened bottom, are sterilized for three hours on three consecutive days in a glass jar, the mouth of which is closed by a tightly-fitting sublimate cotton stopper. A temperature of 200° C. being required for this sterilization, an olive oil bath has to be resorted to. The water intended for the solution of the alkaloid is also sterilized by being raised in a water-bath to 100° C. After this radical sterilization of both water and glass balloons has been completed, the water is allowed to cool off, and the alkaloid is quickly placed in it. Then the glass balloons are placed in the solution, and filled.

The employment of sublimate cotton, totally neglected in Limousin's process, guarantees for Friedländer's solution an absolute freedom from septic germs, while, on the other hand, the integrity of the alkaloid is strictly preserved.

It now only remains to close the elongated neck of the balloons, which is easily effected by the jet of a flame held near the mouth of the solution-jar. To avoid mistakes, the balloons containing different alkaloids are, besides being labelled, of a different color,—for example, red for morphine, black for atropine, white for cocaine, etc.

These aseptic solutions, combining absolute purity with great preservability, recommend themselves to the practitioner in every land. Their employment will with certainty prevent the great objectionable features of an otherwise equally convenient as efficient mode of medication. It is scarcely saying too much to affirm that Dr. Friedländer's innovation has permanently and satisfactorily solved a problem which has long agitated the professional mind.

A CLINICAL STUDY ON ANTIPYRIN.

IF, in spite of the numerous papers on antipyrin previously analyzed by the GAZETTE, we again open our columns to a review of another discussion of the subject, we do so in the appreciation of the especially valuable clinical features distinctive of this recent essay on antipyrin appearing in the *Deutsches Archiv für Klinische Medizin* (April 22, 1886), as the outcome of Dr. Reihlen's careful observations at the Nuremberg City Hospital. We shall discuss *seriatim* the single divisions as made in Reihlen's paper.

I. THE CASES TREATED.

Name of affection.	Patients.	Days of treatment.	Grains of antipyrin.
Typhoid fever.....	29	258	16,770
Croupous pneumonia.....	16	34	2,280
Erysipelas of the face.....	11	43	3,450
Scarlet fever.....	1	2	135
Morbus infectiosus?.....	1	2	135
Puerperal fever.....	1	10	425
Intermittent fever.....	1	5	210
Ulcerative endocarditis.....	1	3	180
Tubercular meningitis.....	1	1	120
Tubercular pleuritis.....	1	30	2,295
Pulmonary phthisis.....	7	29	465
Exsudative pleuritis.....	3	5	288
Bronchectasie.....	1	5	225
Gangrene of the lungs.....	1	5	330
Acute articular rheumatism.	10	36	1,635
Pericarditis.....	2	16	1,050
Chronic dysentery.....	1	3	135
Abscess of the ribs.....	1	3	225
	89	490	30,119

In spite of a large clinical material on hand at the hospital, antipyrin, as seen from the table, was but exceptionally given in phthisis and the acute infectious diseases, in accordance with Merkel's principle, followed in the Nuremberg Hospital, which condemns the "à tout cas antipyresis," and calls simply for a temporary reduction of an excessive and a too persistently high temperature.

II. ACTION OF ANTIPYRIN ON THE TEMPERATURE.

Among all cases treated by Reihlen there was none in which antipyrin exerted no influence over the temperature.* Most generally the fall of temperature after doses of antipyrin shows itself within the first hour after the first dose, and ranges between two-tenths of a degree to two degrees and more.† In two observations of May, in which the thermometer was left in the rectum and read every five minutes, the first fall was observed to amount to one-half degree, and to take place after twenty-five minutes. Still, the rapidity and extent of the fall depends so directly upon the resorption of the drug that no generally valid conclusions can be established in this direction. Aside of resorption, dose, and height of the temperature, the action of antipyrin on the depth, duration, and rapidity of the fall, and subsequent rise of temperature, depends upon various other factors, among which Dr. Reih-

* The only instance recorded in which the drug failed to affect the temperature appears in Alexander's paper, published in the *Breslauer Arztl. Zeitschr.*, 1884, No. 11, concerning a relapse of articular rheumatism.

† For convenience' sake, we have in this paper exceptionally retained the Celsius scale.

len indicates the following as the principal ones:

(a) Age, sex, and constitution of the patient.

(b) Time of administration and other preceding or simultaneous therapeutic interferences.

(c) Mode of distribution of the daily dose.

(d) Nature and stage of the disease.

The younger the individuals and the less vigorous their constitutions are, the greater and prompter is their reaction to antipyrin. It is for this reason that the drug is particularly useful in children's diseases and those marked by profound debility. Thus, in children of two to three years of age, three doses of $1\frac{1}{2}$ to $4\frac{1}{2}$ grains produced frequently a complete apyresis, and in case of a strong man, who, by a dysentery of four months' duration, was reduced to a skeleton, the drug lowered the temperature as far as 35.5° C. It also matters considerably whether antipyrin is given during the fall or the rise of temperature. If the action of the drug coincides with a spontaneous fall of the temperature, a profound and collapse-like lowering often results, as especially observed during the last febrile days of grave erysipelas, without, however, imperilling in any way the patients. In typhoid fever the drug shows also a greater efficacy when given in the evening.*

It is much more difficult to stay or repress the beginning, rise, or reascent of temperature after a fall caused by antipyrin. Doses of 15 grains are here quite useless, but after doses of 30 grains a failure was seen in one case only.

The influence of other antipyretic interferences upon the antipyrin action has been repeatedly observed,—thus, in a grave typhoid fever case of a young girl in whom antipyrin and baths employed separately produced but a minute lowering of temperature, the drug given in the evening, after a number of baths during the day, developed an extraordinary action. Even in connection with calomel (7 grains), antipyrin showed a higher efficacy than when employed alone.

As to the distribution of the whole daily dose, all the author's observations confirm Filehne's assertion that the maximum effect of the drug can only be obtained by an hourly successive exhibition.

Nature and stage of the affection exert, as in the case of all other antipyretics, also with

antipyrin, an essential influence over the degree of its action. Of all affections presenting a febrile elevation, those of the tubercular type present the least resistance against the antipyretic action of antipyrin.† This observation has been made so constantly that in certain dubious cases the suspicion of the tubercular element was either aroused or confirmed by an extraordinarily great reaction to antipyrin, the diagnosis being verified later on. Relatively great effects after small doses were also obtained in a case of puerperal fever, while the acute infectious diseases call for much larger doses. In erysipelas of the face,—an affection well known to present a particularly obstinate continuous fever,—75 grains of antipyrin given in three hours rarely succeeded in inducing a complete apyrexia; at the height of the affection at least larger doses were required to accomplish this end. In croupous pneumonia the above dose given in the stated manner produced likewise but a transient fall of temperature, though in two patients of 17 and 19 years of age, a single dose of 30 and 45 grains of antipyrin led to a complete apyrexia lasting for some hours.

The relation of the stage of a disease to the degree of the antipyrin action is shown most evidently in typhoid fever. While in the first stages of the affection—the period of the high continuous fever—doses of 75 grains produced only an apyrexia lasting three to four hours, with a temperature little below normal, the action of the drug could be observed to grow intenser from day to day in the second and third week of the affection. In this stage doses of 60 or 45 grains frequently cause an apyrexia lasting for ten hours, with the thermometer at 36° C. and lower.‡ From these observations it will be seen that no definite average figures can be established for the antipyrin action. All that can safely be said is that the drug shows no tendency to an abnormally low decrease of temperature, and that larger doses cannot produce a general lower level than is obtainable by the quantities stated above.

III. DOSE.

Demme's assertion§ that single doses ex-

† Of the two cases of collapse observed after antipyrin one was that of a robust young man, presenting for twelve hours a temperature of 36° C. and a minimum of 34.5° C., who succumbed four weeks later to a small tubercular focus of the lungs.

‡ Ziemssen made an identical observation in the hydropathic treatment of typhoid fever.

§ Vide *Fortschritte der Medicin*, Nos. 20, 21.

* Liebermeister has pointed out the same result regarding quinine.

ceeding 30 grains ought only to be exhibited in hospital practice, where a reliable surveillance is present, is no longer tenable, experience having since shown this limitation to be uncalled for. The following doses are recommended by Reihlen as giving the most satisfactory results :

In croupous pneumonia and typhoid fever in the first stage,—

In patients of 14 to 16 years of age, grs. 22 + 22, or grs. 30 + 15.*

In patients of 16 to 20 years of age, grs. 30 + 15, or grs. 30 + 30.

In older individuals, grs. 30 + 30 + 15, or grs. 45 + 30.

In the second stage even adults do not require more than grs. 30 + 30, or 30 + 15.

In erysipelas of the face and head,—

In patients between 15 and 20 years of age, grs. 30 + 30, or grs. 30 + 30 + 15.

In adults, grs. 30 + 30 + 15, or grs. 45 + 30.

In pulmonary phthisis, gr. 30, or grs. 30 + 30 + 15.

Wherever these doses are well borne, but do not suffice, they can with impunity be appropriately increased. The largest quantity ever prescribed by Reihlen was (in a case of erysipelas and in another of pneumonia), grs. 45 + 30 + 30.

In children Penzoldt advises to begin with three successive doses of as many decigrammes (grs. $1\frac{1}{2}$) as the child counts years, though in the grave epidemic of measles visiting Nuremberg in 1884 it became evident that these doses could safely be doubled.

All the doses mentioned thus far refer of course to the administration per os, which in both convenience and safety surpasses all other modes of exhibiting antipyrin. Of Reihlen's fifty-six first patients, only one vomited at the first day. If enemata should appear indicated, the doses should at first at least not exceed the quantities as suggested above for the per os administration ; for the subcutaneous employment of course smaller doses suffice.

The assertions made by various authors regarding a gradual weakening of the antipyrin action on account of the system becoming accustomed to the drug could in no instance be verified by Reihlen's observations.

IV. SECONDARY EFFECTS OF ANTIPYRIN.

Clinical experience has taught us to look for copious sweats in cases of a quick and

considerable fall of animal temperature, and for chills and rigors in the subsequent reascent, these phenomena being the constant attendants as well of the spontaneous variations of temperature, as in intermittent fever, as in those produced artificially as by kairin. The reason that kairin never became a popular drug and was soon displaced by antipyrin is to be found in the fact that the reduction of temperature produced by kairin was invariably attended by chills and rigors, symptoms scarcely ever observed after the use of antipyrin. This differential behavior of the two drugs refers to the comparative rapidity of their action, kairin accomplishing both fall and reascent of a certain number of degrees in half the time required by antipyrin.

Slight chills during the reascent of temperature after the use of antipyrin were observed in two instances only (cases of typhoid fever and erysipelas), while sweating after the fall of temperature was a constant phenomenon. The quantity of perspiration, though usually considerable, appeared never to create any inconvenience to the patients.

Vomiting has been repeatedly observed during the period of the greatest fall of temperature, or in the beginning of the reascent. In a typhoid fever patient, a robust woman of 35 years of age, who received antipyrin per anum, vomiting occurred every afternoon for eleven days, and only ceased after prolonged baths were substituted for antipyrin ; the reduction of temperature produced by the bath not being nearly so great as that caused by antipyrin. Reihlen believes the vomiting in this instance to be primarily the result of the great variation of temperature and to refer only indirectly to the drug itself.

V. ACTION OF ANTIPYRIN ON THE HEART.

Antipyrin affects the heart almost equally constantly as the temperature and the functions of the skin.

The frequency of the pulse is usually found to be parallel with the variations of temperature,—i.e., to fall with the reduction of temperature and to rise with the reascent of the latter. In cases of general debility only, such as marasmus, phthisis, and heart-disease, this synchronic behavior of pulse and temperature was interfered with.

The action of antipyrin upon the quality of the pulse invites our especial interest. Quite in accordance with the previous observations of Noorden,† Cahn, and Demme, Reihlen

* The formulæ indicate doses of hourly succession.

† *Berl. Klinische Wochenschrift*, 1884, No. 32.

noted usually an increase in the tension of the vascular walls and the blood-pressure after the exhibition of antipyrin. Still, the increase in the tension of blood-vessel walls did not always proceed *pari passu* with the temperature-variations, and differed in the same individual on various days. Again, in several instances the pulse appeared to have decreased in tension, and called for the suspension of the remedy or for the simultaneous administration of stimulants. In the non-febrile cases treated, all of which belonged to the rheumatic type, the pulse appeared unaltered, both regarding frequency and pressure. In two of these cases, however, temporary palpitation of the heart set in, and, together with other observations, such as the occurrence of sweating in all non-febrile cases, induces Reihlen to ascribe to antipyrin a direct action on the vascular system independent of its action on the temperature.

The respiratory functions remained unaltered after antipyrin in the cases of pneumonia observed.

The action of the drug on the spleen, as reported by Müller, of Würzburg, could not be confirmed.

Cahn reports the case of a phthisical woman in whom pregnancy was not interfered with by a drachm dose of antipyrin. If this observation, which at present is the only one of its kind recorded, should be proven to be the rule, this property of antipyrin would enhance its value in view of the dreaded emmenagogic influence of quinine and salicylate of sodium.

VI. MODE OF ADMINISTRATION.

Antipyrin in a watery solution is quickly absorbed from the intestinal tract and the interstitial connective tissue. Internally, it is best given in wine or in wafers to disguise its taste, which is bitter, like quinine, but soon disappears. Repugnance, and even vomiting, are not rarely noted to follow a prolonged ingestion of the drug, no matter in what form. In such cases it is well to constantly change the mode of administration between wine, wafers, and the enematous form. For the latter Reihlen uses rather concentrated solutions, and never saw any irritating effects upon the intestines, though he greatly questions the promptness and reliability of this form of medication.*

* The method advocated by Rank, viz., hypodermic injections of watery solutions, prepared warm, was tried once, but soon abandoned on account of the serious inflammatory reaction it produced.

VII. INFLUENCE OF ANTIPYRIN ON THE GENERAL STATE OF THE ECONOMY.

Of all authors who have discussed the question of the influence of antipyrin upon the general condition of the system, Penzoldt alone gives a positively favorable opinion. We quote his words from his essay in the *Berliner Klinische Wochenschrift*, 1884, No. 30:

"The general state of health of children after taking antipyrin, no matter whether the antipyretic action was complete or incomplete, was in the great majority of cases decidedly improved: they appeared livelier, slept better, and sometimes coughed less." The other observers have generally contented themselves with emphasizing the absence of untoward sequelæ, chiefly of collapse.† May, on the other hand, mentions from a large material on hand only three cases, with an improvement of the general health. Alexander (J. c.) can furnish but one instance of a general improvement following after the use of the drug.

In opposition to these isolated examples of a favorable impression of antipyrin upon the economy, we have the following unambiguous conclusion of Ernst, of Zürich, representing his experience with the drug in the great epidemic of typhoid fever in 1884: "Our epidemic has again definitely proven how little sometimes is accomplished by a mere apyresis, delirium and other symptoms of a profound general infection taking their course independently of it."

Reihlen could not observe, aside from exceptional cases and the euphoria subsequent to sweating, that antipyrin exerted any material influence over the general state of the patients.

It is interesting to note that Reihlen's and Ernst's pertinent observations are in a singular contrast with the doctrine of Liebermeister, who regards "the increase of animal temperature not only as the pathognomonic symptom of fever, but also as the direct cause of the principal and characteristic features of fever."

VIII. NATURE AND VALUE OF THE ANTIPYRIN ACTION.

It is universally conceded that antipyrin, though able to reduce and shorten the temperature elevation of the paroxysms of malaria, exerts no influence whatever upon the affection itself. In acute articular rheumatism,

† The Nuremberg physicians who employed the drug extensively during the great epidemic of measles in 1884, speak very favorably of its general influence.

however, authors like Demme, Lenharz, and Guttmann agree that the drug, like the preparations of salicylic acid, evinces a certain specific influence over the pathological process.* Reihlen himself observed six cases of rheumatism in which—the preparations of salicylic acid having proven useless or being contraindicated—antipyrin showed rather gratifying results. Still, Reihlen appears to have good reasons to put no high estimate on the virtues of antipyrin in this direction. In pneumonia and typhoid fever the effects of antipyrin, as hitherto recorded, are likewise little encouraging. In the latter affection, Dr. Kurz, of Florence, is possibly the only clinician who claims any great value for the drug. Reihlen's own observations in typhoid fever showed that antipyrin affected the process itself in no way whatever.

We thus are obliged to conclude that antipyrin in no affection has any specific or even direct influence upon the morbid process, and that its sole value rests in the check it places upon the dangers of an excessive febrile temperature. And bearing in mind the consequences of an overheating of the blood, an increased albuminous destruction,† and the fatty degeneration of tissue, the value of antipyrin will nevertheless be not underrated. The interesting questions pertaining to the nature of the physiological action of the drug

* Very recent clinical evidences have determined that the preparations of ichthyol surpass in rheumatism all other agents.

† Müller has shown that antipyrin causes 150 grains less of nitrogenous matter daily to be discharged than normally, this figure corresponding to about 8 dr. of muscle-tissue.

have hitherto been but imperfectly answered. Demme claims that antipyrin is a general protoplasm poison, producing first an increase and later a reduction of the excitability of heart and nerve-centres. In frogs and rabbits a subcutaneous injection causes first a heightened and then a lowered arterial pressure, first convulsions and later paralysis of the muscles of the extremities and pupils, death ensuing through cardiac arrest. It is uncertain how the antipyretic effects are precisely brought about. Noorden excludes the assumption of an increased discharge of heat, for he found that a suppression of the sweat through atropine had no effect upon the amount of the same.

IX. ANTIPYRIN AND THE OLDER ANTIPYRETIC METHODS.

Nearly all authors who wrote about antipyrin felt induced to compare the new remedy with the old and well-tested ones, especially with quinine. Their final conclusions, though invariably favorable to antipyrin, refer, however, more to the absence of undesirable secondary effects and the promptness of the antipyretic action than to the relative degree of the latter. Guttmann alone has made comparative researches in this direction, and asserts that 30 grains of quinine have as great and constant an action as 60 to 75 grains of antipyrin.

The following table, compiled by Reihlen, represents a comparative review of average antipyretic effects of various methods, as drawn from his own observations as well as those of other authors.

Average Value of Effect of Antipyretic Methods in Typhoid Fever.

AGENT.	Dose.	Remarks.	Average degree of temperature-fall in degrees (C.).	Average duration of temperature-fall in hours.
1. Quinine*.....	15 to 30 grs....	Given in the morning and evening.	1.6° to (3.0°) 0.7°.	4 to 20 hours.
2. Gradually cooled baths† (from 27° to 16°); duration, 30 to 40 minutes	.....	Adult { 2d week, { light cases. { 3d " { grave cases.	1.8° to 2.0°..... 1.8° to 1.9°..... 1.9° to 2.4°.....	4.2 to 9.5 hours. 5.7 to 6.0 " 6.4 to 9.7 "
3. Cold baths‡ (temp. 15° to 20°); duration, 15 minutes.	.....	Light and grave cases un-separated.	2.3°.....	About three hours after bath return to original temperature.
4. Salicylate of sodium. § ||	90 to 120 grs. 60 grs.....	Light and grave cases un-separated.	2.0°..... 2.0°.....	Longer than after quinine. Shorter " " "

* Liebermeister, *Deutsches Archiv für Klinische Medizin*, vol. iii., 1867.

† Ziemssen and Immermann, "The Cold Water Treatment of Typhoid Fever," 1870.

‡ Merkel, *Deutsches Arch. f. Klin. Med.*, vol. viii., 1870.

§ Moser, *Deutsches Arch. f. Klin. Med.*, vol. xx., 1877.

|| Riegel, "Salicylate of Sodium as an Antipyretic."

Average Value of Effect of Antipyretic Methods in Typhoid Fever.—Continued.

AGENT.	Dose.	Remarks.	Average degree of temperature-fall in degrees (C.).	Average duration of temperature-fall in hours.
5. Prolonged lukewarm baths* (temp. 25° to 27°); duration, 3.6 hours.		Medium cases..... Grave cases.....	1.5 to 2.5°..... 1.0°	About one hour after bath return to original temperature.
6. Kairin.....	Various.....		Depth of fall usually greater than after antipyrin.	Duration of fall usually shorter than after antipyrin.
7. Antipyrin.....	30 + 30 to 30 + 30 + 30 grs.	Second week of medium cases.	2 to 3° (4.5°)....	Temp. below { 39.0, about 9 to 12 hrs. 38.5, " 6 " 37.8, " 4 "

* Zwiesler, "Prolonged Lukewarm Baths in Typhoid Fever." Nuremberg, 1882.

As seen from the above table, antipyrin surpasses all known antipyretic agents as far as the duration of the temperature reduction is concerned. Nevertheless, the principal virtue of the remedy does not reside in the degree of its action, but in the promptness and certainty of the latter and also in its absolute harmlessness. Compared with the nervous excitation after quinine, the tinnitus aurium after salicylate of sodium, the chills after baths, and the rigors after kairin, the occasionally noted vomiting after antipyrin ought to be regarded as of little consequence.

Antipyrin has, as could be expected, already displaced kairin from the field of practice, and will do likewise with salicylate of sodium wherever the latter, as in typhoid fever, is only given for the sake of its antifebrile effects. It cannot, however, be expected to replace quinine, or to render the baths superfluous, for in either case the medicinal virtues are not limited to a mere antifebrile action.

Reports on Therapeutic Progress.

TENDON-JERK AND MUSCLE-JERK IN DISEASE, ESPECIALLY WITH REFERENCE TO POSTERIOR SCLEROSIS OF THE SPINAL CORD.

At the first meeting of the Association of American Physicians, held June 17 and 18 last, in Washington, Dr. S. WEIR MITCHELL, of Philadelphia, and Dr. MORRIS J. LEWIS, of Philadelphia, read a paper with the above title (*Boston Med. and Surg. Journ.*, June 24, 1886).

The investigators believed that, by their work, they had increased the knowledge of

the symptomatology of this affection. It was stated that while a muscle or a nerve may be excited by both electrical and mechanical irritation, the former is to be regarded as a ruder agent than mechanical stimulus. In some cases electricity is inapplicable beyond a certain extent. It was held that the knee phenomenon was a direct muscular response, and not due to reflex action. The most delicate test for determining the condition of the muscle is by striking the stretched tendon. This can be done in various situations, as at the knee, ankle, elbow, and jaw. Every distinct muscular exertion, such as winking, if accurately timed, exaggerates these phenomena. To demonstrate this, the patient should lie down with the knee slightly bent. At the time that the tendon is tapped, or just before, the patient is directed to wink, and it will be noticed that the jerk is much increased. This is more beautifully shown in the act of phonation, the patient being directed to count strongly, bringing the whole chest into play at the time the test is applied. A decided sensation, such as heat, cold, or an injury, will increase the responsive power of the muscle or tendon which has been struck. Both the tendon- and the muscle-jerk are reinforced by irritation of distant parts. This reinforcement disappears when the muscles are cut off from the spinal centres.

A blow on the muscle causes the muscle-jerk to extend up and down, but not transversely. In some cases of disease this jerk is irregular. In addition to this contraction, the muscles may form a little eminence or mound, which disappears slowly. Late in ataxia this is unusually well marked. It is also observable in some healthy muscles.

The phenomenon of reinforcement was at-

tributed to an increase of tone in the muscle as a result of the distant irritation.

A tabular statement was then presented giving the results of observation in twenty-three cases of locomotor ataxia. In this table the various symptoms and signs presented were represented by signs. In this way the history of each case could be seen at a glance.

In selecting a decisive symptom by which to arrange the cases into classes, station, or the ability to stand, was selected. This can be accurately estimated by having the wall back of the patient ruled in inches. The examiner takes his place in front of the patient, and directs the patient to keep his eye on a particular spot above the head of the observer. It is then noted how much he varies laterally with his eyes open. He is then turned so that the anterior-posterior sway may be noted. The examination is then made while the patient has his eyes closed. Numerous examinations made by Dr. Guy Hinsdale show that the normal man does not sway over one-half inch laterally, and not over three-fourths of an inch in the anterior-posterior direction. The normal man sways forward first, and first to the right. When the sway is more than three-fourths of an inch in the lateral direction, or more than one inch in the antero-posterior direction, the case should be looked upon with suspicion as indicating that the general health is disturbed, or that there is some disease interfering with the maintenance of the equilibrium. The cases were divided into four classes: 1, those in which station was normal; 2, those in which it was slightly impaired; 3, those in which it was greatly impaired; and, 4, the paralytic cases. In the cases examined, the knee- and ankle-jerks, and their reinforcement, were absent at the time when the cases came under observation. The changes in the arm-jerk seem to advance in the same way as the leg-jerks, although they come on later. In the paralytic stage the muscle-jerk is increased, although the reinforcement is absent. In the first stage of locomotor ataxia the tendon-jerk is diminished or absent, while the reinforcement is fair. In the subsequent stages both the tendon-jerk and its reinforcement are absent. The muscle-jerk and its reinforcement continue normal through the first two stages. In the third stage, while the muscle-jerk is normal, the reinforcement is absent. In the fourth stage the muscle-jerk is increased, while the reinforcement is absent. In the fifth stage the muscle-jerk is diminished, and the reinforcement is absent. In the sixth stage both the muscular jerk and the rein-

forcement are absent. The increase of the muscle-jerk late in the disease may be due to some irritative changes in the muscle, but this has not been positively determined.

In regard to associated movements. In a certain proportion of cases, if the patient is directed to shut his right hand, the left hand will also shut to a certain extent, and if the patient is sitting down, the leg may be drawn up. This condition has become more marked as the ataxic condition has increased.

Another symptom referred to, and which was considered a new symptom, was prominence of the eyeballs. While the condition is not as marked as in exophthalmic goitre, it is sufficiently distinct to be apparent if attention has been called to the matter.

QUEBRACHO.

MM. ELOY and HUCHARD, in an article on "The Bark and Active Principles of Quebracho Blanco," published in the *Archives de Physiologie et Pathologie*, April 1, 1886, arrive at the following conclusions: The bark of quebracho blanco furnishes four active substances, all with different symbols and physiological and toxic properties. The active principles of quebracho modify but little the general sensibility of mammalia (guinea-pigs, rabbits, and dogs). Quebrachine, hypoquebrachine, aspidospermine, aspidospermatine, pure, do not influence general sensibility, but the residual products after their extraction apparently do. In some experiments, the phrenic nerve was more susceptible to galvanic stimulation after aspidospermine had been administered than after quebrachine.

Motility is affected in various ways. Strong doses of aspidospermine cause convulsions; small doses, fits of trembling; very large doses, rapid paralysis. One of the most remarkable phenomena observed in the animals experimented on is hoarseness, sometimes aphonia, especially in guinea-pigs; this may be attributed to paralysis of the extensor muscles of the vocal cord. Quebrachine causes muscular paralysis both more rapidly and more evidently; hypoquebrachine and aspidospermatine are analogous in action to quebrachine, but less evidently so than aspidospermine. The residual products provoke thorough and rapid paralysis. Four or five minutes after a hypodermic injection, paralysis attacks the extremities of the limbs, rapidly affects them throughout, and is alternate with tonic convulsions. Circulation is not

modified either by the residual products or by hypoquebrachine or quebrachine, but the heart-beats became slower under the influence of aspidospermine, and quicker after injections of aspidospermatine.

It is important to control previous researches concerning the action of quebracho on respiration, its bark being recommended for different kinds of dyspnoea. Quebrachine does not alter either the rhythm or the depth of the respiratory movements, neither do the residual products of aspidospermatine; hypoquebrachine slightly modifies them. Aspidospermine, on the contrary, increases the amplitude of respiratory movements in the proportion of 1 to 5 in eight or fifteen minutes; then, a moment afterwards, the rhythm is increased, and continues so during two, three, and even four hours; it is not like the increase in amplitude. If the dose be increased or eliminated, arrhythmia occurs, and the depth and amplitude of the movements are lessened. Aspidospermine has a greater influence on the frequency of costal respiration than on abdominal. It is therefore of all the active principles of quebracho the greatest modifier of the respiratory movements. All the active principles of quebracho modify the temperature. The residual products raise it, but this seems to be due to asphyxiation. The aspidospermine which is currently sold lowers the temperature from 2 to 3 degrees (Centigrade) in a space of from thirty to forty minutes; aspidospermatine from 3 to 6 degrees in nineteen minutes; hypoquebrachine the same.

Of all these substances, quebrachine is the most antithermic. Venous blood is black when the animal is asphyxiated by the influence of residual products, reddish or red under the influence of quebrachine, hypoquebrachine, and aspidospermatine, that is to say, the substances that lower the temperature. This coloration is comparable to that observed in animals which die whilst the interchange of gases is arrested. These substances cause excessive secretion of the kidney, and the intestinal and salivary glands; hypoquebrachine and aspidospermine produce diarrhoea and diuresis; aspidospermine increases salivary secretion in dogs, urinary secretion in guinea-pigs and rabbits. The residual products have the same action on the intestinal glands and on the kidneys. All these substances can cause death. The residual substances are the most toxic; next in order are quebrachine, aspidospermatine, and, lastly, aspidospermine. Death results

either from asphyxia or from paralysis of the muscles of respiration, when the doses are considerable; more slowly from arrested interchange of gases, when the doses are smaller and elimination is only partially effected. By administering suitable doses of these principles, the residual substances excepted, useful therapeutic agents may be obtained. It must be remembered that quebracho is not an inert substance; if it do not realize all that enthusiasts assert, it nevertheless has certain merits. These researches were undertaken by MM. Eloy and Huchard to verify what has been asserted by previous investigators, also to study the action of each active principle of the bark. MM. Eloy and Huchard are engaged in further researches on quebracho, which will be shortly published.—*London Medical Record*, June 15, 1886.

ON QUILLAIC ACID.

From KOBERT's remarks on quillaic acid made at the Strasburg meeting of physicians and naturalists last year, as appearing in *Heitler's Centralblatt*, April, 1886, p. 183, we abstract the following *résumé*: The saponine of the market, a mixture of various organic and inorganic substances, contains but little pure saponine, and owes its poisonous properties to quillaic acid and sapotoxine. The former, which can be prepared from the quillaia bark much easier, is itself and in all its combinations extraordinarily toxic, 0.5 mg. ($\frac{1}{2000}$ gr.) of the acid pro kg. (2 lbs.) of bodily weight introduced directly into the blood killing a dog or a cat, while 2.0 grammes (30 grs.) ingested per os are borne with impunity. The acid affects particularly the muscular apparatus, and in its effects resembles polygala senega. As pronounced by Schmiedeberg, the quillaic acid belongs to the protoplasma poisons.

TREATMENT OF ASPHYXIA OF THE NEW-BORN.

DR. L. N. SHARP, of Minneapolis, Minn., writes to the *Medical Record*, July 3, 1886, that the perusal of an abstract with the above title has led him to describe a method accidentally discovered many years ago by himself. He was trying to resuscitate an asphyxiated new-born child, but did not succeed, and the pulsation ceased in the cord. "I cut the cord, and continued Marshall Hall's method till I became convinced the child was dead. So many years have now passed that I cannot

speak of the condition of the heart, but am under the impression I continued my efforts till the beat of the heart could not be heard. Then I asked for a cloth in which to wrap the body, and took the child in my hands, holding the feet in an elevated position with my right hand, while the back and shoulders of the child, in a depending position, lay upon my left hand. The nurse was tardy in bringing me the cloth, and while I was holding the babe it gasped. I laid it down on the bed, and again commenced Marshall Hall's method for resuscitation, but no results; I became convinced again that the child was dead. Taking it in my hands again in the manner above described, I asked for a cloth, and as before had to wait a little, and while waiting the child gasped. The thought came to me at once that the child gasped because the force of gravity carried the blood to the brain, and the lack of this was why the child was dying. I held the child in the same position till gasp after gasp brought respiration and circulation to a normal condition. The child lived. And many, many times since have I resuscitated children which I think would not have lived had I used the ordinary methods."

DIFFERENTIAL TOXICOLOGICAL BEHAVIOR OF GELSEMIUM AND STRYCHNINE.

The possibility of mistaking a case of strychnine-poisoning with criminal intent for an accidental intoxication caused by a prescribed preparation of gelsemium recommended to our notice RAIMONDI'S pertinent comparative investigations as set forth in the *Ann. di Chim. Med.*, Sett., 1885. If it is possible to recover enough of the poison to enable us to experiment with it on warm-blooded animals, the nature of the poison is readily established. If, however, the scantiness of the substance in question allows only experiments on frogs, the following differential features must be our guide:

1. In gelsemium-poisoning the motor paralysis has a central cause, which does not apply to strychnine.
2. The effects of strychnine manifest themselves with equal intensity over the whole body, while in gelsemium-poisoning the posterior extremities show the clonic-tonic convulsions more distinctly than the anterior ones.
3. Immediately or shortly after one strychnine paroxysm, a second may follow; in gel-

semium-poisoning considerable time usually elapses between the single paroxysms.

4. The stage of tetanus from strychnine may last several days, that of gelsemium rarely exceeds an hour.

5. In chemical respects the two drugs present also some characteristic differences, which, under the name of Schwarz's differential reactions, are detailed in Raimondi's paper.

COCAINE IN LAVAGE OF THE STOMACH.

DR. CHARLES N. DIXON JONES, of Brooklyn, writes to the *New York Medical Record*, July 3, 1886, as follows: "Gastric lavage is rapidly becoming our most reliable treatment in chronic dyspepsia and gastritis. In order to avoid some of the disagreeable features attending this operation, I have resorted to the following expedient: About fifteen minutes before commencing the operation the patient is allowed to hold in his mouth a piece of absorbent cotton saturated with a four per cent. solution of hydrochlorate of cocaine; in a few minutes the palate and fauces are painted with the same solution. The stomach-tube is lubricated with a mixture of olive oil, oil of wintergreen, and cocaine, after which it may be introduced and the stomach irrigated without that disagreeable vomiting of the tube and efforts at gagging which frequently attend the operation. I have adopted this method in some of the most trying and difficult cases, and always with the most happy result."

OBSERVATIONS ON THALLIN IN TYPHOID FEVER AND PNEUMONIA.

DR. KARST, of the Russian navy, communicates to the *Wratsch*, No. 2, 1886, a number of interesting observations made with thallin in twelve cases of typhoid fever and croupous pneumonia. The average dose employed was 3 grains. He observed a reduction of the temperature in fifty-eight instances amounting to 2-3° C., in twenty-seven 1-2° C., in eighteen 0-1° C., and in fourteen 3-4° C., while in five instances the temperature was noted to rise 1° C. The greatest fall usually took place about an hour after ingestion of the drug, and lasted for two to three hours. Profuse perspiration was observed fifty-eight times, slight perspiration forty times. Rigors setting in during the fall of temperature were observed twenty-five times, but could usually be aborted by a new dose of thallin. Pulse and respiration became slower under the

influence of the drug. After the exhibition of large doses of thallin the urine assumed a dark brown coloration, and inclined towards a rapid decomposition. Noticing an invariable decrease in the quantity of urine voided during the days of the thallin medication, Karst concludes that the oxidation processes are checked by the drug and not, as Magliano assumed, favored. Two healthy individuals who took 60 grains of thallin during three days complained of slight headache and cardialgia; their pulse and respiration were slowed, and their urine presented a dark green color.

LARGE DOSES OF IODIDES AND BROMIDES IN MENINGITIS.

DR. J. F. STEVENS, of Shabbona, Ill., reports in the *Medical Record*, July 3, 1886, a case of meningitis occurring in an infant 8 months of age. The disease when the child was first seen had so far advanced that parallelism of the eyes was lost, strabismus ensuing. The little patient was evidently failing rapidly, was unconscious, with head retracted somewhat. This condition had come on slowly. There had been no convulsions or convulsive movements. The bowels were extremely constipated, with the abdomen somewhat retracted. The respiration was irregular, and pulse somewhat quickened. A powder containing 5 grains of calomel was given, and was followed in one hour by a full dose of castor oil. Blisters were placed behind the ears and mustard to the feet, taking care to cover the soles thoroughly, and an ice-bag was placed at the head. In about one hour the patient aroused somewhat, and in an hour and a half, by which time the bowels moved, cried out several times.

R Sodii brom., $\overline{\text{ss}}$;

Aquæ,

Syr. simplex, aa q.s. ad $\overline{\text{ss}}$ iii.

Sig.—One full teaspoonful every hour.

10 grains of bromide of sodium were given every hour, and $\frac{1}{2}$ grain of iodide of potassium was given every second hour. At the end of twenty-four hours the latter was given only once in three hours. The bromide of sodium was given in doses of gr. x every hour, continuously, for four days. Under this treatment the condition of the patient slowly improved, but any attempt at reduction of the dose was sure to be followed by bad symptoms.

At the end of four days the bromide was

given once in two hours; from this to once in four hours, and then three times a day. The iodide was persisted in until symptoms of iodism manifested themselves, when the medicine was gradually withdrawn. During all this time the ice-cap, filled now with simply cold water, was used. The bowels were kept open with the oil.

Some fourteen days after the case was first seen small abscesses appeared on the scalp, which would discharge about a teaspoonful of pus when opened. These continued until ten were formed. On the eighteenth day the treatment was changed, citrate of iron and ammonium in cod-liver oil three times a day. Small doses of brandy were also given from time to time. The patient is now steadily improving, and bids fair to recover. Both ears have discharged fetid pus freely.

There was no history of syphilitic trouble in the parents, though there had been tuberculosis in a preceding generation.

ON PEPTONE SOUP-POWDER.

We have in a previous issue of the *GAZETTE* recommended the peptone soup of DR. JAWORSKI (of Carlsbad) as a dietetic article of considerable value for the sick-room. Still, the inconvenience connected with the daily fresh preparation of the soup was a very patent drawback to its universal adoption. As we learn from the *Zeitschrift f. Therapie* (No. 29, 1885) and the *Deutsche Medicinal Zeitung* (No. 23, 1886), Dr. Jaworski has succeeded in removing this disadvantage of the otherwise very valuable preparation by changing it from the liquid to the solid form. The peptone soup-powder as prepared by the apothecary May, of Berlin, after the instruction of Jaworski, not only fully represents the advantages of the peptone soup, but also widens the sphere of its applicability. The powder, prepared also in form of pastilles or lozenges, can be well preserved and employed like medicines in definite doses and intervals. As about three ounces of the powder are requisite for the daily nutrition of patients, it is advisable to mix about one-half of this quantity with the other articles of diet allowed. Jaworski confines the clinical employment of the peptone soup-powder to the following indications:

1. All cases which call for a peptone alimentation per os or per anum.

2. In a required sur-alimentation the peptone soup-powder can advantageously replace

Debove's meat-powder, which it surpasses in resorbability and digestive efficacy.

3. In all cases of forced nutrition, such as in idiotic patients.

THE THERAPEUTIC VALUE OF THAPSIA PLASTER.

The resin which forms the basis of this plaster is obtained from the root of the thapsia garganica, an umbelliferous plant growing in Southern Europe and Northern Africa, bordering on the Mediterranean Sea. Although employed internally as an emetic and purge and as a counter-irritant for rheumatic pains by Galen and other old writers, its use seems to have declined until 1868, when it was revived in France. As used in this country, the plaster is composed of seven per cent. of the resin, combined with yellow wax, colophony, and turpentine. There seems to be some difference of opinion as to its value, but it appears to be but little known by the profession in this country. The French plaster occurs in the form of rolls and cylinders, of an orange-yellow color, which is very cleanly in its application, leaving but little residue on the surface when removed. This plaster has been subjected to study by Dr. JAMES K. CROOK (*New York Med. Journ.*, July 10, 1886), who has employed it in several cases of neuralgia and muscular pain. According to Dr. Crook, the heat of the body and hand is sufficient to make it adhere. A vigorous friction of the surface with a spirituous solution before laying on the plaster will greatly augment its activity. In a period varying from five to ten hours after its application considerable itching of the part supervenes, and, if the edge of the plaster is everted, the skin beneath will be found of a uniformly scarlet hue. It should be removed as soon as the irritation becomes sufficient to render it annoying. In many cases he has found that it could be well borne for twenty-four hours; but, as will be seen, it is not always safe to advise so long an application. Within from twenty-four to thirty-six hours it will be found that the area of efflorescence has extended considerably beyond the limits of the plaster, and that the eruption is assuming the form of a punctate or miliary rash, thickly scattered over the surface. In some cases the centres of the papules are occupied by minute vesicles, which may proceed to pustulation. The local redness and irritation continue for about four days, and then begin to decline. If vesicles have been formed, they dry up and dis-

appear speedily, though a purplish-red discoloration of the skin may persist for several weeks. The eruption is not unlike that produced by croton oil; but Dr. Crook has never observed umbilication of the thapsia vesicles, nor in any case have cicatrices remained after their disappearance.

There are two principal objections to the use of the thapsia plaster: 1. The remarkable tendency of the eruption to spread, making it difficult to confine the sphere of its action within desired limits. 2. The occasional severe and painful character of its local action. These drawbacks may be partially overcome by prescribing a piece of the plaster much smaller than the surface desired to be acted upon, and, if it is a first application, by counselling the patient to remove it within six hours. Of course, if the plaster is being used on a patient for the second or third time, and he has been found to possess no idiosyncrasy to its action, it may be allowed to remain much longer. It is his belief that a tolerance is acquired for thapsia after repeated use. If the irritation produced by the plaster is unusually severe, an inunction of olive oil, or glycerin and rose-water, or simply pulverized starch, will usually give relief. Patients should be cautioned to wash the hands after handling the plaster, as the resin may be conveyed to other parts in this way. He has several times observed an erythema of the face produced by it, and in one case a mild conjunctivitis was developed.

From the cases in which Dr. Crook has employed it, he thinks that this plaster has special value in muscular and rheumatic pains of long standing in which other remedies have failed to give relief. He has had but little success with it in acute troubles of this nature. It has also seemed to him to be a useful application to the chest in the irritation and painful coughs of phthisis and chronic bronchitis, especially when accompanied by difficulty of breathing. In cases of simple cardiac palpitation of neurotic origin, the importance of which is often enhanced by the imagination of the patient, a small piece of the plaster applied to the *opposite* side of the chest will often act advantageously by withdrawing the patient's attention from the heart. On theoretical grounds, the plaster should act beneficially in promoting the absorption of pleuritic fluid and in favoring resolution in phthisis. Dr. Porter has employed the plaster for a number of years past, and has extended its application to a much wider field. He states that he holds it in high estimation. The irri-

tating properties of thapsia rather disqualify it for use in children.

Regarding its mode of action, thapsia may be classed among the most vigorous counter-irritants or derivatives. Its influence is undoubtedly chiefly exerted by the active determination of blood which it excites from the deeper structures to the surface. Its effects may also be partially produced, in common with those of other counter-irritants, through the trophic nerves, the *methodus medendi* of which does not seem to be fully understood as yet.

A CONTRAINDICATION OF PARALDEHYDE.

It has been asserted that paraldehyde does not give rise to any unfavorable secondary symptoms, and that there is no known contra-indication to its administration. In the *Neurologisches Centralblatt*, No. 31, 1886, we find, however, a little note by Dr. SOMMER, of Allenberg, which renders the correctness of these views doubtful. A patient, 18 years of age, who for six successive days had taken daily doses of one drachm of paraldehyde, showed on the seventh day, a few minutes after having drunk half a bottle of beer, a deep scarlet injection of the skin, covering almost the entire head, neck, back, posterior surfaces of the lower extremities, and partially the chest, abdomen, and upper extremities. This peculiar phenomenon lasted half an hour. For the sake of an experiment Sommer gave the patient on the next evening another dose of paraldehyde, followed by a small quantity of alcohol on the next morning. The same vascular injection having appeared again, Sommer concluded that paraldehyde ought not to be given to patients presenting atheromatous defects, and should at least not be employed in connection with alcoholic liquids. Only one other observer, Eickholdt, has previously observed similar interferences of the circulation following after the employment of paraldehyde. He noted the occurrence of cerebral congestions and of vaso-paralytic symptoms after the prolonged use of this drug.

INTUBATION OF THE LARYNX.

Intubation of the larynx is attracting a great deal of attention at present as a substitute for tracheotomy, and we have in several issues alluded to the results obtained by this mode of procedure in the hands of different

physicians since it has been introduced by Dr. O'Dwyer, of New York. It may not be out of place to again give the methods employed and this procedure as recommended by Dr. INGALLS:

The child should be wrapped in a sheet or shawl, which will pinion the arms, and then held upright in the nurse's lap; an assistant holds the child's head. The gag is then introduced between the jaws, and opened as wide as need be, but not with great force. Dr. O'Dwyer says that it is unnecessary to use the gag with infants who have not back teeth. The physician, sitting in front of the patient, passes his left index finger over the base of the tongue and down behind the epiglottis, and with it guides the end of the tube into the glottis. The handle of the applicator should be held near the child's sternum until the end of the tube has reached the pharyngeal wall, when the handle is rapidly elevated, and tube directed downward and forward along the index finger into the larynx. This will not be found difficult, but the infant's epiglottis is so small and flaccid, that the operator may not be able to recognize it, though he will have no difficulty in recognizing the larynx as a whole, which, except that it is slightly irregular, feels much like the end of one's little finger. The operator should not expect to detect the opening of the glottis, but must be guided by his anatomical knowledge to pass the tube into the centre of the larynx. Unless he is careful to carry the handle of his instrument high, and thus bring the tube as far forward towards the base of the tongue as possible, the tube will pass into the œsophagus. While it is desirable to accomplish this portion of the operation as quickly as possible, it should not be done with too great haste. Ten or twenty seconds, which is a long time for this portion of the operation, may be taken without danger. If the tube is not then introduced, it should be removed for a minute or two, to allow the child to breathe, and then the operation may be repeated; but if the tube seems to be in the proper position, whether the operator is certain of it or not, the slide upon the handle should be crowded forward, so as to disengage the obturator, which is then withdrawn. Some cough will occur at once, and, if the tube has not been inserted into the larynx, or if it has not been passed down so that the rim rests on the vocal cords, it is likely to be expelled, and may be seen or felt in the back part of the mouth. If the tube has been properly inserted, respiration will become

easier, and after a few minutes the operator cuts one end of the silk thread, passes his finger behind the epiglottis, and holds the tube while the thread is withdrawn.

DR. DAVIDSON (*Buffalo Med. and Surg. Journ.*, July, 1886) has also employed this procedure, and he agrees with Dr. Waxham, who has had by far the largest number of operations up to this time, as to the following advantages which intubation possesses over tracheotomy :

1. No opposition is met with on the part of parents. Quite a contrast with the difficulty which we usually meet with in obtaining the consent to tracheotomy.

2. It relieves the urgent dyspnoea as promptly and as effectually as tracheotomy, and, if the child dies, there is no regret that the operation was performed, and no discredit attached to the physician.

3. There is less irritation from the laryngeal tube than from the tracheal canula. As the tube is considerably smaller than the trachea, it does not press upon it firmly at any portion, excepting at the chink of the glottis.

4. Expectoration occurs more readily than through the tracheal tube.

5. As the tube terminates in the throat, the air that enters the lungs is warm and moist from its course through the upper air-passages, and there is less danger of pneumonia.

6. It is a bloodless operation.

7. It is more quickly performed, and with less danger.

8. There is no open wound, which may be the source of constitutional infection.

9. Convalescence is more rapid, and there is no ghastly wound to heal by slow granulations.

10. The patient does not require the unremitting care of the surgeon as in tracheotomy.

11. It as yet seems to be a more successful method of treating croup, either diphtheritic or membranous, than tracheotomy.

There are, however, certain disadvantages connected with it, and these are formulated by Dr. Davidson as follows :

1. The difficulty of inserting the tube. This, though admitted, is certainly less than tracheotomy.

2. That the tube may become blocked with mucus or membrane. The recorded experience in thirty-seven cases would indicate that this does not occur, because—and this is one of the marked advantages of tubage over tracheotomy—the patient has the ability to compress the air in the lungs and expel it

with an explosive force ; in other words, to cough,—thereby clearing the tube.

3. That the tube may slip through into the trachea. If too small a tube is used, this may happen, but from the length of the tube, it cannot sink out of reach, and may be removed by the mouth or by tracheotomy.

4. That the child cannot swallow well. This is true only of fluids, and it is necessary to avoid giving liquids by the mouth. A few drops will trickle into the trachea and cause violent coughing, and this irritation will often lead to pneumonia. Dr. Waxham has devised a feeding-bottle for young infants, and it may be necessary to use a small-sized œsophageal tube in some cases.

5. The canula may be coughed out in the absence of the physician, and death ensue before he can be summoned to reintroduce it. This danger is not nearly so great as that which attends the wearing of the tracheal tube.

It seems as yet too soon to pronounce absolutely upon the merits of this operation, but there seems to be already accumulated sufficient evidence of its success to entitle it to a trial in cases where tracheotomy is the only other resource.

EFFECTS OF DRUGS ON THE SWEATS OF PHTHISIS.

DR. ABLETSOFF, who has made a number of accurate observations on the effects of various drugs upon the sweats of phthical patients, finds that hydrochlorate of pilocarpine, given in doses of $\frac{1}{16}$ of a grain, produces no limitation of the sweats in a very large proportion of cases ; but its use frequently causes or increases gastro-intestinal irritation and sleeplessness, and, in fact, makes the general condition of the patient worse. With doses of from $\frac{1}{8}$ to $\frac{1}{4}$ of a grain the diurnal and nocturnal loss of weight almost always increases, and with doses of from $\frac{1}{16}$ to $\frac{1}{8}$ of a grain the loss is augmented in the majority of cases. The reasons why this drug has been recommended for phthical patients are probably to be sought in its expectorant action ; but though as a matter of fact the amount of sputum daily expectorated is increased by the drug, it has no advantages whatever over other remedies whose effects in other directions are not so deleterious. Homatropine, picrotoxine, and duboisine distinctly decrease the cutaneous perspiration in healthy subjects, the latter drug having the greatest effect. For phthical patients, however, who are weakened by exhausting sweats, more

suitable drugs will be found in agaricine and homatropine, as duboisine and picrotoxine frequently produce other and undesirable effects.—*Lancet*, July 3, 1886.

ON CHLOROFORM-WATER.

DE BEURMANN recommends in the *Zeitschrift für Therapie* of April 1, 1886, diluted chloroform-water as an antifermentative agent, which is also a local anæsthetic for mucous membranes. It is also useful as a mouth-wash in toothache, and given internally in cardialgia and dilatation of the stomach. In various decomposition processes in the stomach, in vomiting (especially of pregnancy), and as a vehicle for sedative and narcotic remedies, chloroform-water is, in Beurmann's estimation, unexcelled. The following are some of his favorite prescriptions in which the chloroform-water is exhibited :

- ℞ Aque chloroformii saturat., ℥vi;
Aq. aurantii florum, ℥ii;
Aq. dest., ℥iv. M.
S.—Teaspoonful for a single dose.
- ℞ Aq. chloroformii dilut., ℥iv;
Aq. aurant. flor.,
Syr. simpl., āā ℥i;
Morph. hydrochlor., gr. ss;
Pot. brom., gr. 15. M.
S.—Dessertspoonful several times daily.
- ℞ Aq. chlorof. dil., ℥iv;
Aq. flor aur.,
Syr. papaveris, āā ℥i;
Pot. brom., gr. 15. M.
S.—Dessertspoonful as a single dose.
- ℞ Aq. chlorof. dil., ℥iv;
Aq. menth. pip.,
Syr. simpl., āā ℥i;
Sodii salicyl., ʒi. M.
S.—Tablespoonful as a single dose.

THE PHYSIOLOGICAL ACTION OF THE HEAVY OIL OF WINE.

The heavy oil of wine as one of the component parts of Hoffmann's anodyne occupies a prominent but unrecognized place in our list of remedies.

According to the U. S. Dispensatory, this agent is formed by the distillation of alcohol with a large excess of sulphuric acid. The product of the distillation is generally in two layers, one of which contains the heavy oil of wine, while the other layer consists of sulphurous acid. For the purpose of separating any ether which may be in the oily layer, it is exposed to the air for twenty-four hours, when

it is washed with water, thereby removing any sulphurous acid which may contaminate it, and after these two processes have been accomplished the oil is ready for the market. Notwithstanding the fact that Hoffmann's anodyne is so frequently used, and has for so long a time occupied a prominent place in the household, and a useful one in the profession, curiously enough, nothing seems to have been done toward increasing our knowledge of its composition or of its physiological effects. Its formation is generally accounted for in the following manner :

When sulphuric acid and alcohol are added together, one of the results of their union is sulphovinic acid ($C_2H_5HSO_4$); but if the sulphuric acid be in great excess the sulphovinic acid is partially decomposed, forming the heavy oil of wine. The mixture now consists of ethyl-sulphate, (C_2H_5)₂SO₄; ethyl-sulphite, (C_2H_5)₂SO₃; and ethylene, C_2H_4 . Two forms of this ethylene are known, viz., etherin and etherol, and the mixture of these two separate forms of ethylene alone, forms the *light oil of wine*.

The same doubt seems connected with the specific gravity of the heavy oil. Sadtler believes 1.133 to be the most correct estimation of its specific gravity yet made.

DR. H. A. HARE (*Med. News*, July 10, 1886) has recently performed a number of experiments with this oil to discover what part was played by this drug when administered with alcohol and ether in Hoffmann's anodyne. He finds that in small doses the arterial pressure is increased, while large doses decrease arterial pressure. Small doses increase the rate of the pulse, very large doses are required to diminish the pulse-rate, small doses increase the force of the heart, while large doses do not decrease it unless extremely large quantities are given. These experiments were made with the oil alone, and show that even although in the official preparation its action may be masked by the more powerful and more diffusible stimulants, it at least does not occupy an inert position in the anodyne mixture.

Dr. Hare concludes from his experiments,—

First.—The belief in heavy oil of wine being the quieting agent in Hoffmann's anodyne, is fallacious.

Second.—That the calmative effects of this mixture depend largely on the ether rather than on the oil.

Third.—It would seem probable that in Hoffmann's anodyne we possess an agent in which there are linked together three drugs

of undoubted power, each one of which successively substitutes the other, stimulating the system in the order here named, viz., ether, alcohol, and the heavy oil of wine.

On animal temperature, as ascertained by the thermometer in the rectum, no effect is produced, even when the arterial pressure is very low. That large doses of the heavy oil of wine are in no way possessed of toxic effects, was proved by the fact that 30 c.c. of the drug given by the mouth to a small dog, weighing twelve pounds, failed to produce any apparent symptoms, except, perhaps, to stimulate him slightly. While the odor of the oil is penetrating, it is by no means disagreeable, and it possesses but little taste other than that of the presence of an oily substance.

ON THE HYPODERMIC USE OF IODIDE OF SODIUM.

DR. ARCARI, of Mailand, as we learn from the *Wien. Med. Woch.*, No. 4, 1886, is in the habit of applying iodide of sodium hypodermically in cases in which the internal use of the drug has to be suspended on account of resulting gastric irritation. He makes two injections daily, the dose ranging from 4 to 15 grains.

The results obtained by Arcari in syphilis with the hypodermic employment of iodide of sodium were quite as satisfactory as with any other mode of treatment. The quantitative examination of the urine revealed that in the cases showing favorable results of treatment the elimination of iodine proceeded slowly and scantily, while in the cases with negative results this elimination was quick and ample. This fact led Arcari to conclude that in the latter cases larger doses had to be given for a long time in order to obtain even here favorable results. To prevent an undue burdening and irritation of the alimentary channel, the alternate internal and hypodermic application suggests itself wherever large doses of the iodine salt are required.

RADICAL CURE OF VARICOCELE BY EXCISION.

Il Bulletino of the Royal Academy of Medicine of Genoa (No. I., 1886) reports a case in which Professor Ceci successfully treated a large left varicocele by excising the dilated spermatic venous plexus. The patient, aged 22, suffered great inconvenience in consequence of the enlargement. Under chloro-

form, an incision two and a half inches long was made on the left outer side of the scrotum down to the vein, the distention of which was maintained by an assistant exercising pressure at the external abdominal ring. With a director, the vas deferens and the spermatic artery were carefully isolated from the vein, which was secured with two catgut ligatures at the abdominal ring and near the testicle. The varicose venous plexus was then excised. The skin wound was closed with a catgut suture, a drainage-tube having been placed in the lower angle. On the eighth day, when the dressing was changed, there was some oedema of the scrotum; this part, as well as the inner surface of the thigh, was the seat of carbolic eczema, and carbolic necrosis had attacked the edges and the bottom of the wound. These symptoms disappeared under borax and iodoform, and the patient made a perfect recovery. Professor Ceci considers that the technical progress in operations for varicocele due to the influence of aseptic and antiseptic precautions, justifies preference for excision of the vein over difficult and complicated methods.—*Lancet*, June 26, 1886.

FURTHER OBSERVATIONS ON URETHAN.

We abstract DR. KRAEPELIN'S report on the action of urethan, as published in the *Neurologisches Centralblatt*, No. 5, 1886. The observations of the author comprise two hundred single doses and thirty-four different cases. The dose ranged between 15 and 45 grains, and in two cases only doses of 60 to 75 grains were given.

Kraepelin emphasizes at the very beginning of his paper that the drug produced in no instance any untoward secondary effects, only in the case of an alcoholic subject suffering from gastric catarrh, the stated large quantity of urethan caused vomiting. Interference with the appetite was never observed even where the drug was given for several weeks in succession. Ten to fifteen minutes after ingestion of the drug a quiet sleep ensues, lasting usually several hours, and from which the patients awake refreshed. If this sleep is interrupted by any external causes, the hypnotic effects assert themselves again after the removal or disappearance of the interference. Urethan, however, is not an energetic hypnotic and fails usually in cases of intense or even considerable excitation, where it is far inferior to paraldehyde. In delirium tremens especially Kraepelin saw no effects as observed

by Sticker. Again, urethan is no anodyne, it does not remove pain, and in this respect can of course never replace morphine. In combination with morphine, urethan seems quite useful.

Kraepelin mentions as especial indications for urethan the affections of the melancholic and paralytic type; in mania and, as intimated above, in delirium tremens urethan is useless, and paraldehyde ought to be resorted to. Hence we see that only conditions of slight excitation or depression constitute the principal indications for urethan; besides, it is claimed to be useful in exhausting diseases even when fever coexists.

The drug has certain advantages over paraldehyde, which cannot be questioned: among these are the longer duration of its effects and the absence of gastric irritation after its use.

Urethan can be taken simply in a watery solution or, to correct its taste, with tinct. aur. cort.

SOME CERTAINTIES IN THE THERAPEUTICS OF EPILEPSY.

DR. C. L. DANA has written a paper with the above title, which is published in a recent number of the *New York Medical Journal*. His conclusions are summarized in the following statements:

1. Diet, exercise, and proper hygienic treatment rank above all other single therapeutic measures.

2. The bromides take the second rank in the treatment of epilepsy.

All bromides act alike in this disease. If one does not cure another will not. Occasionally changing and mixing reduces the attacks for a time, and benefits the stomach.

3. The best bromides are those of potassium, sodium, ammonium, and hydrogen (hydrobromic acid); possibly we may add nickel.

4. Bromides may be given in daily doses of \mathfrak{z} i, increased gradually until the attacks are suppressed, or the dose reaches \mathfrak{z} iv to \mathfrak{z} i daily. Few patients can tolerate more than this latter dose. Thorough bromidization should be always tried, if necessary to stop fits, and it may be occasionally repeated. But bromidization is sometimes injurious, even making the disease worse, and it must always be employed with caution.

5. When the fits are suppressed, the bromides should be carefully reduced, but never entirely stopped for at least two years after the last fit.

6. In most cases, and especially in noctur-

nal epilepsy, an extra large dose of bromide should be given at night.

7. It is very important that bromides should be chemically pure, that their use should be continued a very long time, and that their depressing effects should be offset by tonics and all possible roborant measures.

8. The best non-specific adjuvants (drugs) to the bromides are potassium iodide (in syphilitic epilepsy), potassium bicarbonate (in lithæmic and rheumatic states), carbonate of ammonium, the hypophosphites, arsenic, iron, and quinine.

9. The other chief adjuvants to the bromides are diet, exercise, a regular life, hydrotherapy, counter-irritation on the neck, and in the line of drugs, zinc, belladonna, strychnine, valerian, and the nitrites. Combinations of bromides with the other drugs mentioned will lessen attacks when bromides alone will not.

10. The best substitutes for the bromides, when these do no good or do harm, are belladonna, zinc, strychnine, glonoin, borax, and alteratives.

For nocturnal epilepsy, increase the dose of bromide at night, and add chloral or digitalis. Give also, if needed, strychnine. Raising the head of the bed or making the patient sleep in a chair at night are measures to be tried.

For the status epilepticus give large enemata of chloral, and use emetics and purges. Venesection is often efficacious, morphine is dangerous, chloroform is only palliative, and nitrite of amyl is of little value.

THE INELIGIBILITY OF ANTIPYRIN IN PNEUMONIA.

Observations of untoward effects produced by newly-introduced drugs, or of their failures in certain affections in which they have been recommended, ought to claim the interest of the practitioner as highly as reports on their medicinal virtues and efficacy. It is a positively objectionable feature of many contributors to the therapeutic press that they explicitly discuss the advantages of drugs, and dwell on the constant expansion of their sphere of usefulness, while paying too little attention to their objectionable aspects and the instances of their clinical failure. The THERAPEUTIC GAZETTE has repeatedly opened its columns to this unjustly neglected field of therapeutic knowledge. In the case of antipyrin, which is gradually becoming a popular antipyretic, it is of course very desirable to

know what the drug cannot do and to which untoward symptoms it can eventually give rise.

DR. POSADSKI (vide *Ieshenedjelnaja Klinitscheskaja Gazeta*, No. 30, 1885) reports that he has treated twenty-five cases of croupous pneumonia with antipyrin, giving daily doses of 15 grains to 2 drachms, and single doses of 7 to 30 grains. Simultaneously, he treated twenty-three cases of croupous pneumonia with calomel, in order to be enabled to compare the results of both forms of treatment. Calomel was given in doses of $\frac{1}{8}$ grain four times daily. All patients were vigorous men, ranging between 26 and 30 years of age, and were admitted for treatment at the third or fourth day after the beginning of the affection. The average duration of the pneumonia in the patients treated with antipyrin was 8.1 days; in those treated with calomel, 7.1 days. In the latter set of patients, the termination of the affection presented invariably what Posadski calls a critical decline; in the former, a gradual resolution. In other words, the febrile symptoms disappeared completely, and sooner under the calomel treatment, and gradually and later under the antipyrin treatment. In five instances collapse was observed to follow after the use of antipyrin, a condition to which calomel of course could never give rise. The effects produced by the two drugs on the pulse and respiration were not materially different. In four cases antipyrin caused vomiting, and in two others a peculiar measles-like eruption of a very itching nature, affecting both skin and mucous membranes. In eleven cases the urine presented a singular dark cherry coloration, and contained a large quantity of antipyrin. The bodily weight showed a greater daily fall under calomel than under antipyrin, though its rise proceeded more quickly under the former drug.

The action of antipyrin on the temperature curves is, according to our observer, neither a constant nor a prompt one, and alongside of the above-mentioned other disadvantages does not justify the exhibition of the drug in pneumonia.

RADICAL OPERATION FOR HERNIA.

An improved operation for the radical cure of hernia has for some time past been practised by Drs. SVENSSON and ERDMANN, surgeons to the Sabbatsberg Hospital at Stockholm. A ligature is applied to the neck of the hernia, and the sac is cut off below the

ligature, the contents being previously examined by means of an incision into the sac and returned; or, if only omental, excised together with the sac. In congenital hernias the upper part of the sac only is removed, and where the large bowel is included in the hernia and adherent to the sac wall, this, after being separated from the surrounding tissue, is returned, together with the large intestine, and the rents of Poupart's ligament united by sutures. The dressing employed is iodoform and boracic acid, the wounds being washed with sublimate solution. Since this has been substituted for carbolic gauze, abscesses, which used to occur frequently, have become rare. Of the forty-eight cases thus operated on, none of which were selected, thirty-eight were permanently cured, at least no return of the hernia occurred within six months: in twenty per cent. it returned, but in a less severe form.—*Lancet*, June 26, 1886.

THE ACTION OF THALLIN ON THE ANIMAL ORGANISM.

DR. TSCHISTOWITSCH publishes in the *Ieshenedjelnaja Klinitscheskaja Gazeta*, No. 30, 1885, the results of a series of experiments made with thallin on frogs, rabbits, and dogs, as follows:

1. The sulphate of thallin, employed in doses of 0.02 to 0.1 pro kilo. of the bodily weight (per os, per rectum, subcutaneously or intravenously), has in healthy animals a very uncertain action on the temperature. There is no direct proportion ascertainable between the quantity of the drug employed and the fall of temperature.

2. In febrile animals, however, the temperature falls proportionally to the quantity of the drug employed. The temperature rises again after the lapse of two to six hours. The drug causes no vomiting.

3. The blood-pressure in febrile dogs is not materially altered by doses of thallin.

4. Intravenous applications of 0.02 of thallin cause a fall of the blood-pressure and a reduction of the number of ventricular contractions.

5. The fall of the blood-pressure refers principally to the action of the drug on the peripheral vaso-motor apparatus, and partially only to its impression on the heart itself.

As to the antibacterial action of thallin, our observer found that the alcoholic fermentation of grape-sugar was checked by the presence

of 0.1 per cent. of thallin, and wholly prevented by five per cent. of the drug.

TETANUS CURED BY REMOVAL OF COMPRESSION FROM THE RADIAL NERVE.

According to the Paris correspondent of the *British Medical Journal*, July 3, 1886, a remarkable case of traumatic tetanus was recently cured by the removal of compression from the radial nerve. A boy, aged 14, was admitted to Conrad Brunner's wards at Zurich, for a fracture of the left radius, which had occurred three weeks previously. The fourteenth day after the fracture, the child observed that he could not stretch the fingers of the left hand; his parents noticed that, when he walked, his body was bent forward. The symptoms became more and more marked; the child had bad nights, and was sent to the hospital. Symptoms of tetanus, risus, trismus, and emprostotonos, were marked. On examining the patient, there was evidence of a fractured epiphysis of the radius badly reduced, and a bulky callus just below the articulation. It seemed evident that the tetanus resulted from compression of the radial nerve by the callus. The parts were exposed by incision, when it was found that there was pressure of the nerve by new formations attached to the callus. The compressed nerve was set free, and the prominent portion of the radius resected. The symptoms of tetanus slowly disappeared; the patient had morphine injections. Three weeks after the operation the boy was cured.

In the same issue reference is also made to the fact that DR. M. L. MOREAU publishes, in the *Alger Médical*, January and February, 1886, notes on a case of tetaniform symptoms cured by rest, sedatives, and electricity. The patient had trismus and opisthotonos, without any apparent reason; his intelligence was intact. He recovered in four days, during which period morphine and chloral were given in full doses, and the patient was kept thoroughly at rest, and was enveloped in cotton-wool. The patient had presented similar symptoms fourteen years previously, in consequence of injury to the scalp from a nail. On the present occasion another equally insignificant reason was suggested. The patient was a neuropath, and in order to obtain relief from his condition, he covered his body with needle-punctures by using an instrument similar to a cupping apparatus. These recurring tetanic attacks indicated a constitutional predisposition which M. Moreau sought to ex-

plain by hysteria, but the symptoms were not sufficiently marked to justify this diagnosis, nor was there any evidence of poisoning by strychnine. A carefully-kept register of the patient's temperature during the attacks would perhaps have furnished some data, but this was not done. The most probable hypothesis was that repeated cutaneous irritation, practised on a neurotic patient, provoked accidents of a tetaniform character.

INFLUENCE OF SALICYLATE OF SODIUM ON THE ELIMINATION OF NITROGEN AND URIC ACID.

DR. SALOMÉ, of St. Petersburg, communicated to the *Wien. Med. Jahrb.*, iv. p. 463, 1885, his observations on the influence exerted by salicylate of sodium on the elimination of nitrogen and uric acid. We condense his principal conclusions as appearing in *Schmidt's Jahrbücher*, April, 1886, p. 133. Wulfssohn, of Königsberg, and Virchow, ascertained first a reduction then an increase of the nitrogenous elimination after administration of the drug to dogs. Byasson noticed likewise the same increase on his own person and in rheumatic individuals. But as Horbascewsky found a decrease of the nitrogenous elimination on his own person after taking salicylate of sodium, Paschkis concluded to re-examine the entire question by observations on his person. Taking the drug in doses of 3 grains to 13 dr., and recovering the nitrogenous elements in urine and fæces, after the Ludwig method, he arrived at the following conclusions: The nitrogenous elimination is not augmented by doses of 3 to 75 grains. After doses of 2 dr., an increase occurs on the following morning, after doses of 13 dr. on the same day reaching its maximum, also on the next morning. After a dose of 2 dr., a decrease in the elimination occurs on the second day, and reaches its minimum on the sixth day. After smaller doses (3 to 20 grains), the elimination is somewhat reduced.

ON NERVOUS PALPITATION OF THE HEART AND ITS TREATMENT.

The editors of the THERAPEUTIC GAZETTE do not hesitate to exceptionally devote the columns intended for brief and condensed abstracts of foreign therapeutic matters to full translations, if they meet with an article combining scientific interest with practical worth to so eminent a degree as in the case

of DR. SKORCZEWSKI's paper, appearing under the above heading in the April issue of the Vienna *Zeitschrift für Therapie*. The paper, with omission of some unimportant statistical matters, reads as follows :

"Nervous palpitation of the heart is an affection which develops without any visible and, moreover, without any anatomical causes, and is based upon the very disagreeable sensation of an exceptionally prominent and augmented cardiac action. The elder writers comprised under this category all morbid processes characterized by an increased heart's action, while at present we exclude all affections not referring to a purely nervous cause but to anatomical alterations, and certain special lesions known as angina pectoris and Basedow's disease. After this exclusion we have left the genuine nervous palpitation known also as cardiopalmus cardiagnus.

"The augmented cardiac action is caused by a functional interference with its nerves, which in its turn may result either from an irritation of the cardiac accelerator (the sympathetic) nerve, or from a paralysis of the cardiac inhibitory nerve (pneumogastric), or any point of its course from the centres in the spinal cord to the centres in the heart. But it is very difficult, and sometimes impossible, to determine the cause of the palpitation and the anatomical site of the cause.

"In spite of the frequency of nervous palpitation, few authors have gathered pertinent statistical materials. In my practice I found the palpitation in 6.4 per cent.* of all patients, but much more frequently in women than in men (proportion 8 to 1).

"The palpitation appears with a varying frequency in various ages. In females I have often noticed it already between the fifth and the tenth year (1.6 per cent.), and between the tenth and fifteenth year (2.1 per cent.). Most frequently, however, the affection appears between the fifteenth and twentieth year (20 per cent.), then between the twenty-first and thirtieth year (18.3 per cent.). Between the thirtieth and fortieth year the percentage falls to 9.7, between forty-one to fifty to 3.7, and beyond the fiftieth year we find but very few cases (1 per cent.).

"In men the affection does not appear before the age of twenty, and remains stationary regarding frequency up to the forty-fifth year ; later it becomes very rare (0.5 per cent.).

"Chlorosis and all the blood dyscrasias play

a very important rôle in the development of nervous palpitation in a similar manner, as has been supposed in the case of Basedow's disease (Friederich, Gräfe, Romberg, Taylor). In the cases coming under my observation 76 per cent. showed a simultaneous dyscrasia of the blood, 26 per cent. chlorosis, 35 per cent. anæmia, 36 per cent. malarial intoxication. Texta believes that in malaria the palpitation refers directly to the engorgement of the spleen, though my own observations have not confirmed this view.

"Various authors, such as Traube, Henoch, Murchison, and Frerichs, have called attention to the frequent connection of nervous palpitation with digestive troubles, a view which my own observations have confirmed.

"Botkin found the cause in one case of nervous palpitation in the so-called wandering kidney. In 101 cases of wandering kidney treated by me I observed nervous palpitation in 10.8 per cent.

"In affections of the genital tract I noted nervous palpitation in 12.1 per cent., and especially in structural alterations, such as new formations, flexions, versions, and the products of inflammation. In dysmenorrhœa and menorrhagia nervous palpitation is a common complication.

"In nervous troubles the palpitation appears especially frequently (86 per cent.). The following specification throws an interesting light upon this connection : General neuroses,—neurasthenia, spinal irritation, hysteria, hypochondria, 77.8 per cent. ; megrim, 27.0 per cent. ; intercostal neuralgia, 10.2 per cent. ; neuralgia of the pneumogastric nerve and myalgia, 4.3 per cent.

"The clinical appearances of nervous palpitation are very varying. The patients describe the sensation in different manners. Some are unable to describe it at all, others complain of a trembling of the heart or of powerful movements after which the muscle appears to cease working. Sensations of pain and pressure are almost universally admitted. Being asked to localize their sensations, the patients again give wholly different answers. Some point to the region of the left side of the heart, others to the middle of the chest or to its entire left side, others again to different extremities. Some describe their sensation as proceeding from the heart and wandering over the whole left side of the chest, and occasionally the palpitation is said to be felt most on the neck or along the spinal column. The palpitation paroxysms differ also in the same person in duration and frequency. Preisendörfer ob-

* All stated percentages refer to 2883 patients, among whom were 185 with nervous heart palpitation.

served paroxysms lasting several hours, and Gerhardt some lasting several days.

"In the cases coming under my observation I noted three different groups,—1. Those with an augmented apex-beat; 2. Those with an increased frequency of the beat; 3. Those without any alteration of the heart's action.

"The clinical course of the palpitation is usually parallel with that of the affections which have caused it, the palpitation remaining, in exceptional cases, only after the disappearance of its causative agencies. In such cases our affection calls of course for a special treatment. A long duration of the palpitation may give rise to serious troubles, and predisposes to anatomical alterations.

"The therapeutics of nervous palpitation, when resulting from other primary troubles, must first be directed to the removal of these. It is especially important to do away with any existing abuse of liquids, such as coffee, tea, and alcoholic drinks, and to observe strict dietetic and hygienic precautions. Indulgence in smoking is particularly objectionable. The affections of blood-dyscrasia (chlorosis, anæmia, malaria), of the nervous, digestive, and genital apparatus, call, of course, for an especial treatment. For the removal or lessening of the intensity of the paroxysms various methods of treatment have been recommended.

"Preisendörfer advocates pressure upon the pneumogastric nerve, while Mühlberger recommends massage of the epigastric region together with derivative drugs.

"Schröter employed successfully cold or ice applications to the heart, and Rosenbach ether locally for the same purpose. Digitalis, which is recommended by Schröter, is wholly disapproved of by Leyden in this affection, also in Basedow's disease.

"Leyden claims that narcotics, especially morphine, given internally, or better hypodermically, give gratifying results in the paroxysms of angina pectoris, based upon sclerosis of the coronary arteries, and Rosenbach and Schröter obtained good results with these remedies also in nervous palpitation. Chloral, chloroform, and ether also have the reputation of favorably influencing the paroxysms. The first remedy is to be given internally, the two others both as inhalations and internally in large doses ($\frac{1}{2}$ to 1 teaspoonful).

"Rosenbach recommends also bromide of potassium in large doses (30 to 45 grains) and iodoform (3 to 7 grains). Nitrite of amyl, first introduced seventeen years ago by Lauder Brunton, enjoys still an excellent reputa-

tion. Hay recommends this remedy, and also nitrite of ethyl, nitrite of methyl, and particularly nitrite of sodium.

"Hamond, Hay, and Green speak also well of very minute doses of nitro-glycerin (1 to 3 to 10 drops of a one per cent. solution).*

"Omitting all other drugs, which, though recommended from various physicians, have never attained any popular hold in the treatment of palpitation, I proceed to allude to the results which the above remedies have given in my hands.

"Pressure upon the pneumogastric nerve, massage, and cold applications appeared in no way to favorably influence the affection. Morphine, though a great stand-by in all painful troubles, is not well borne by patients of the nervous and hysterical type, and therefore its exhibition in palpitation is little recommendable. Nitrite of amyl and nitro-glycerin give but doubtful results when first exhibited, and scarcely any later. The following measures constitute my routine treatment. During the paroxysm of the palpitation I order cold applications to the region of the heart, provided they are—what is not always the case—well borne by the patient. Besides, I prescribe antispasmodic remedies, among which I prefer a solution of bromide of sodium, 15 to 30 grains, to be given either at once or in two doses. I also give the patient aqua laurocerasi, with equal parts of tincture of valerian (or of tinct. cann. indic., or tinct. castorei sibirici), to be taken in doses of 5 to 10 drops every few minutes. In frequently returning paroxysms I order a powder, consisting of bromide of sodium (7 grains) and quinine ($1\frac{1}{2}$ to 3 grains), to be taken three times daily before each meal, and Fowler's solution (5 to 10 drops in a spoonful of sweetened water after the meals). This medication is to be kept up for several weeks.

"Electricity gives undoubtedly good results in this affection. Few therapists, however (like Duchenne), advocate faradization; the majority (among these Eulenburg, Huchard, Meyer, Remak, and Ziemssen) prefer galvanization. Ziemssen has directly proven by experiments that the constant current influences the heart like the striped muscles, and that the effects of the current, if applied to the thorax walls, are just the same as if applied to the heart directly. Ziemssen obtained wholly negative results from faradization.

* We miss the mentioning of the iodide of sodium or potassium, which have recently been successfully tried by French physicians.

The application of the current can be effected in various manners. Ziemssen recommends to place one electrode to the sternum and the other to the back, at a height corresponding to the position of the heart. Eulenburg places the anode over the heart, and the kathode like Ziemssen, or the anode to the sternum and the kathode to the neck. Erb advocates the same method.

"In the patients treated by myself I have invariably placed the anode on the neck in the region of the nerve-trunks, and the kathode on the apex. After a couple of minutes I could always notice a considerable decrease in the frequency of the apex-beat (10 to 30).

"After the application the patients usually pronounced their condition improved. Eminent results could be obtained in the paroxysms returning several times daily, a few faradic applications usually sufficing to either remove the paroxysms wholly or to lessen their severity. Satisfactory results were likewise obtained in intercostal neuralgia and cardialgia.

"It is possible that the great success of galvanization obtained in my patients is partly to be attributed to the simultaneous use of medicinal waters (chiefly of iron), which I invariably prescribe in this affection. It is an indisputable fact that iron exercises a tranquillizing influence upon the action of the heart not only in nervous palpitations but also in developed cardiac defects, and even in incomplete compensation."

HOANG-NAN, A REMEDY FOR HYDROPHOBIA.

DR. BARTHÉLEMY has for years tried the effects of hoang-nan in paralysis, dyspepsia, chlorosis, and several skin-diseases, and appears to have attained such favorable results as to lead him to further trials of the drug. As we learn from the *Bull. Génér. de Thér.* (February 28, 1886), Barthélemy gave the drug to a patient who, having been bitten by a mad dog three weeks previously, presented the characteristic symptoms of hydrophobia. The drug subdued the reflex convulsions to a certain extent, but was unable to prevent the lethal exit.

In Tonkin the drug is often used successfully in large doses, and in short intervals, in cases of hydrophobia or snake-bite. It is interesting to learn that Barthélemy instituted with this drug a preventive treatment of hydrophobia in twenty-four cases. Two patients

showed the onset of the disease by various symptoms, such as complete insomnia, restlessness, hallucinations, barking, etc. In no patient, however, did the disease actually appear. The duration of the preventive treatment was on the average twelve days. The usual daily dose of hoang-nan is 15 grains, which suffices to produce the characteristic physiological effects of the drug, viz., increase of reflex motion, convulsions, and trismus. Lesserteur has given the drug to over one hundred persons bitten by mad dogs, and has always succeeded in warding off the hydrophobic attack.

Barthélemy concludes as follows: Either hydrophobia is transferred to man much more rarely than is usually supposed, or hoang-nan given to the bitten person during the period of incubation modifies so effectually the nervous system and the tissue-changes as to prevent the development of the hydrophobic virus.

ON THE ANTISEPTIC EFFECTS OF VINEGAR AND ITS UTILIZATION IN THE TREATMENT OF DIPHTHERIA.

Under this heading DR. FRIEDERICH ENGELMANN, of Kreuznach, publishes in the *Centralblatt für Klinische Medizin*, April 3, 1886, a paper which appears worthy of our attention. We present to our readers the following condensed abstract of it.

The fact of the absolute failure of the ordinary therapeutic measures in diphtheria induced Engelmann to institute trials with citric acid, which, as he had learned, was being successfully exhibited in the United States in this affection. The results obtained were sufficiently satisfactory and rather encouraging. In a grave case of diphtheria in the country, where citric acid could not be readily obtained, and a prompt interference was indicated, the author resorted to vinegar, and was gratified with the result obtained. He used partly ordinary vinegar, partly the officinal acetum, internally in the proportions of 1 to 4 as a gargle, 1 to 2 and even undiluted as a spray, 1 to 2 or 3 for painting undiluted.

Engelmann tested the antiseptic action of vinegar after the ordinary methods and was surprised at the degree of antisepsis obtained, which even surpassed that of a 5 per cent. solution of carbolic acid. He added to fluids crowded with bacteria a quantity of vinegar and 2½ and 5 per cent. solutions of carbolic acid separately, and obtained the following astonishing results after having transferred the fluids to gelatin-plates:

	First Day.	Second Day.	Third Day.	Fourth Day.	Fifth Day.
Vinegar, 2 to 10.....	.....	Numerous colonies.	Likewise.	Likewise. Soil partly fluidified.	Soil fluid.
Vinegar, 3 to 10.....	.....	.....	.....	.....	No colonies.
Vinegar, 4 to 10.....	.....	.....	.....	.....	"
Vinegar, 5 to 10.....	.....	.....	.....	.....	"
Carbolic acid, 2½ per cent., 2 to 10.....	Innumerable colonies.	Soil fluid.	.....	.....	.....
Carbolic acid, 2½ per cent., 3 to 10.....	Innumerable colonies.	Soil partly fluid.	Soil fluid.	.....	.....
Carbolic acid, 2½ per cent., 4 to 10.....	Innumerable colonies.	Soil partly fluid.	Soil fluid.	.....	.....
Carbolic acid, 2½ per cent., 5 to 10.....	Innumerable colonies.	Innumerable colonies.	.....	Soil partly fluid.	Soil fluid.
Carbolic acid, 2½ per cent., 10 to 10.....	.....	.....	.....	.....	.....
Carbolic acid, 5 per cent., 2 to 10.....	Very numerous colonies.	Soil partly fluid.	Soil fluid.	.....	.....
Carbolic acid, 5 per cent., 3 to 10.....	Numerous colonies.	Soil partly fluid.	Soil fluid.	Soil fluid.	.....
Carbolic acid, 5 per cent., 4 to 10.....	.....	Isolated colonies.	Numerous colonies.	Soil fluid.	Soil partly fluid.
Carbolic acid, 5 per cent., 5 to 10.....	.....	.....	.....	.....	No colonies.
Control	Innumerable colonies, soil partly fluid.	Soil fluid.	.....	.....	.....

This chart indicates that an addition of 3 to 10 of vinegar suffices to completely check the development of micro-organisms, while of a 2½ per cent. solution of carbolic acid an addition of 10 to 20, and of a 5 per cent. solution of carbolic acid an addition of 5 to 10 was required for the same result.

Other comparative researches of the same nature gave invariably identical results.

If these experiments are accurate, and if their results should be confirmed by other observers, we possess in vinegar an antiseptic agent of the highest type, which strangely has hitherto escaped the attention of therapeutists. Even Koch never alludes to vinegar as an antiseptic medicine in any of his experiments of disinfection. Alongside of its disinfecting efficacy, rivalling and surpassing apparently that of carbolic acid, vinegar possesses such other advantages as will insure for it the first rank whenever an antiseptic remedy is needed for internal use and for the mucous membranes of the mouth and pharynx. It is not caustic nor irritating, and is wholly innocuous. Later researches will no doubt determine whether and to what extent the well-known action of acetic acid on the animal cells and tissues need be considered in the application of this remedy.

The harmlessness of vinegar together with its alleged powerful antiseptic influence ought to induce practitioners to give the remedy a trial in diphtheria. If it is not productive of good it can at least do no harm, and that is more than can be said of many therapeutic interferences practised in diphtheria.

Reviews.

A SYSTEM OF PRACTICAL MEDICINE BY AMERICAN AUTHORS. Edited by Wm. Pepper, M.D., LL.D., etc., assisted by Louis Starr, M.D., etc. Vol. V. Diseases of the Nervous System. Philadelphia: Lea Brothers & Co., 1886.

The editor of this work may well call attention with some pride to his success not only in the general character of the work, but in the punctuality with which its volumes have reached the subscribers. The number of articles, as given in the editor's "Valedictory," is 185, by 99 authors, covering, with indexes, 5600 pages.

The volume on the nervous system opens with a chapter on "General Semeiology of Diseases of the Nervous System; Data of Diagnoses," by E. C. Seguin, M.D., and is followed by one on "Localization of Lesions in the Nervous System" by the same author. This article is extensively illustrated, which much increases its great intrinsic value. The author has chosen, he tells us, by reason of limited space, not the "more interesting and logical" way of a general demonstration of "the organic independence and functions of various parts of the nervous system," with the classified "results of autopsies bearing on localization," but the method which he terms "a summary statement of the association of the symptoms with definite lesions." Whether the former method would have given us a better article we cannot say, but the one we have is of great value, though much condensed. "Mental Diseases," by Chas. F. Folsom, M.D., cov-

ers one hundred pages, and treats the subject of insanity with great thoroughness. Dr. Chas. K. Mills contributes "Hysteria," "Hystero-Epilepsy," "Catalepsy," and "Ecstasy," which are, as might be expected, not only valuable additions, but written in an exceedingly interesting style. The illustrations are also excellent. These articles cover over one hundred and fifty pages.

"Neurasthenia" is by H. C. Wood, M.D. This, while a short, is an exceedingly useful article, in which the author, while acknowledging the exceedingly vague outline of the disease, its relation with so many other definite conditions, its abuse as a cover for weak diagnoses, yet manages from these very circumstances to convey to the reader a vast amount of valuable diagnostic knowledge, and to present, through all its mists and envelopes, a "neurasthenia" clear cut, readily defined, and perfectly recognizable. Dr. Henry M. Lyman contributes "Sleep and its Disorders," which is a studious and interesting presentation of the perplexing problems involved in "sleep" and "dreams," "night-terrors," somnambulism, and hypnotism. He also studies the question of insomnia, lethargy, and apparent death, and has produced a standard article, which will be fully appreciated by the thoughtful student. "Acute Affections produced by Exposure to Heat" is also from the pen of Dr. H. C. Wood, who has identified himself with the subject, and carried its study to the extreme possible limits of the day.

Dr. Wharton Sinkler contributes chapters on "Headache," "Tremor," "Paralysis Agitans," "Chorea," and "Athetosis." Dr. S. Weir Mitchell one on "Vertigo." Dr. Mitchell believes that vertigo by no means depends upon a condition of cerebral congestion in anæmia, but that it is due in all cases to a disturbance of the cerebral nerve-ganglia, and that the attendant basal condition is but one incident in the attack. Dr. Sinkler's article on "Chorea" is rendered additionally valuable from his use of the statistics gathered in the case-books of the Infirmary for Nervous Diseases. Dr. Allen McLane Hamilton gives us two articles on "Local Convulsive Disorders" and "Epilepsy." Dr. Morris J. Lewis writes on "The Neural Disorders of Writers and Artisans." Dr. P. S. Conner on "Tetanus." Dr. Edward P. Davis on "Disorders of Speech."

Dr. Jas. C. Wilson writes three articles on "Alcoholism," "The Opium Habit and Kindred Affections," and "Chronic Lead-Poison-

ing." While all three are excellent, the chapter on alcoholism is of especial note. It is distinguished for its extreme care in statement and its breadth of thought. The intemperate advocate of abstinence and the weak-willed victim of excess will alike fail to extract comfort from the author's calm and judicial statement of the question. The following sentence may be taken as embodying the author's view of the moral aspect of the temperance question, p. 576: "The occasional moderate use of alcohol in the form of wine with food, and as a source of social pleasure, is not fraught with the moral or physical evils attributed to it by many earnest and sincere persons. It is, on the contrary, probable that the well-regulated and temperate use of sound wines, under proper circumstances and with food, is in the majority of individuals attended with benefit. Those who suffer from the effects of excesses do not usually reach them by this route, nor would they be saved by any amount of abstinence on the part of temperate and reasonable members of society;" and on p. 577: "The part which heredity plays in many of the most inveterate and hopeless cases of alcoholism is wholly out of proportion to the obvious and easily recognized part played by momentary temptation." The author has studied the question carefully in all its bearings, and, while by no means neglecting the medical aspect of the matter, has gone broadly over the whole ground, studying the variations of injury produced by the different alcohols, the effects of employment as a predisposing agency, the influence of heredity, and the various tangle of questions which the apostle of total abstinence has made into a sort of Chinese puzzle with which to fool himself as well as his followers. The same writer's article on "The Opium Habit and Kindred Affections" furnishes a good sequel to the chapter on "Alcoholism," showing how the removal of alcohol alone will by no means solve the question so long as any agent is procurable which can act as a stimulant or intoxicant.

"Progressive Unilateral Facial Atrophy" is by Dr. Chas. K. Mills. "Diseases of the Membranes of the Brain and Spinal Cord," by Dr. Francis Minot, who also contributes "Tubercular Meningitis," "Chronic Hydrocephalus," and "Congestion, Inflammation, and Hemorrhage of the Membranes of the Spinal Cord." Dr. John Ashhurst writes on "Spina Bifida," and Dr. E. C. Spitzka gives us two exceedingly thorough, readable, and interesting articles on "Anæmia of the Brain and Spinal

Cord" and "Chronic Inflammatory and Degenerative Affections of the Spinal Cord." Dr. Wm. Hunt contributes "Concussion of the Brain and Spinal Cord." Dr. Robt. T. Edes, "Intercranial Hemorrhage and Occlusion of the Cerebral Vessels, Apoplexy, Softening of the Brain, Cerebral Paralysis."

Dr. H. D. Schmidt writes on "Atrophy and Hypertrophy of the Brain" and "Diseases of One Lateral Half of the Spinal Cord." Dr. H. C. Wood, on "Syphilitic Affections of the Nerve-Centres." Dr. Chas. K. Mills and Dr. Jas. Hendrie Lloyd contribute the articles on "Tumors of the Brain and its Envelopes" and "Tumors of the Spinal Cord and its Envelopes," covering nearly one hundred pages with the two articles. Dr. Mary P. Jacobi gives us "Infantile Spinal Paralysis," an excellent and exhaustive study of the subject. "Disease of the Peripheral Nerves," by Dr. Francis I. Miles; "Neuralgia," by I. J. Putnam, M.D.; and "Vaso-Motor and Trophic Neuroses," by Dr. M. Allen Starr, conclude the volume.

Any thorough discussion of the merits of the various articles being precluded, we are sure that the work has suffered no falling off in its concluding volume, and we look in vain for a series of the kind which can equal it in practical value, and especially as a representative American work. We have already a number of similar works, European in their origin, whose value to us is diminished from the very fact of their foreign origin. If anywhere there are writers and thinkers, practitioners and experimenters, peculiarly fitted to instruct and assist the American practitioner in his work, they are to be found among ourselves. The whole tone of the work is familiar and American and original; in fact, there is a remarkable amount of originality in most of the articles. They display the result rather than the material and mechanism which produced it, and so completely does the work as a whole mirror to us the most advanced views of the day, that in all the rapidly shifting opinions of this changeable age, the *System of Medicine by American Authors* bids fair to survive as a text-book and authority for many years to come.

E. W. W.

A TREATISE ON THE DISEASES OF THE NERVOUS SYSTEM. By Wm. A. Hammond, M.D., etc. With one hundred and twelve illustrations. Eighth edition, with corrections and additions.

New York: D. Appleton & Co., 1886.

The motto from Horace still decorates the title-page, and reminds the reader of the ob-

vious fact that the present edition does not go very much beyond the previous ones in any noticeable respect. It is about the same in size, shape, and general appearance. It is modestly clothed in the same green muslin covers, though its pages are somewhat increased in number. A chapter has been added upon "Certain Obscure Diseases of the Nervous System," and the author declares that the work "has continued to receive approval at home and abroad to an extent beyond that ever given to any other work, of like scope and objects, published in any part of the world." Can it be possible that no work of "like scope and objects" has ever been published?

The new chapters, section vii., treat of tetany, Thomsen's disease, and miryachit and kindred affections. Tetany, which has been termed "a variety of intermittent tetanus" and "idiopathic contraction of the extremities," is more prevalent, the author imagines, upon the Continent than in either Great Britain or America. Still, he imagines it possible that in a modified form it occurs among us more frequently than is supposed, being "diagnosed as hysteria or as 'cramps.'" He describes certain prodromata, and gives us an extended description of the fully-developed condition. In regard to its diagnosis, he believes that "many cases have been reported as idiopathic tetanus." It is "also frequently diagnosed as hysteria," from which it radically differs. The contractions are greater, it affects more than one limb, and we would add that, judging from the author's description of the disease, the mental condition is different. In regard to its treatment, the bromides, we are told, are useful, and, "when properly administered, the contractions cease in the course of a few hours." The natural limit of the disease is stated by the author to vary from two days to two weeks or more. The author's method of employing the bromides is to give 100 grains, say, of sodium bromide dissolved in a half-glass of water at once. This should be followed by 30-gr. doses every two or three hours, and this should be repeated three times a day for a week or longer after the contractions are relieved, provided there is any evidence of a tendency to a return of the disease. He says, "I have never seen a case of tetany resist this treatment." Neither have we. Electricity, massage, etc., aggravate this disease, as also strychnine. The author considers it as "essentially a congestion of the spinal cord."

Thomsen's disease is one of those unfortunate diseases, or Thomsen is one of those unfortunate men who have given their own name to a disease. There is no proof that he ever had it himself; he only described it. It is characterized by "tonic spasms in the muscles, to which in the act of exerting them volitional impulses are sent, and which remain for some time after the movement is executed." This definition is rather labored, and would be improved if stated in another way,—characterized by tonic spasms, which occur as a continuation of a muscular movement originated by volition. The author considers it difficult, in the present state of our knowledge, to locate the lesion which gives rise to this affection, whether it is brain, spine, or muscles. The author says in regard to treatment, that there "are no data by which we can be guided."

In "Miryachit and Kindred Affections" the author quotes largely from the late Dr. Geo. M. Beard in regard to the "Jumpers," whom he identifies with the sufferers from miryachit, and ends the chapter with the remark "that it is very obvious that there is in these kindred affections a field for observation that is as yet comparatively unexplored," though what will become of rising men and specialists when all fields have been explored and nothing new can be found, and all old literature and exploded superstitions have been revamped and disposed of, is one of the sad questions of the by no means remote future.

E. W. W.

A MANUAL OF PRACTICAL THERAPEUTICS CONSIDERED IN REFERENCE TO ARTICLES OF THE MATERIA MEDICA. By Edward John Waring, C.I.E., M.D., Fellow of Royal College of Physicians, London, etc. Edited by Dudley W. Buxton, M.D., B.S., London, etc. Fourth edition.

Philadelphia: P. Blakiston, Son & Co., 1886.

As the author aptly remarks, the thirty-two years since the first appearance of this work have seen many important changes, and therapeutics has "advanced with rapid strides." The progress has been the more rapid ever since the old beaten track was abandoned, and a road made into the practically new world which the science now occupies. To accommodate the work to these changes, much old matter has been swept away and much new matter necessarily introduced. By this process the work has been materially benefited, the omissions, equally with the admissions, being a positive benefit; the bulk of the book being actually diminished, while its contents—its valuable contents—are much

increased. In looking over the book we find excellent articles on "Amyl Nitrite," "Apiol," "Apomorphine," "Antipyrin," "Boracic Acid." The article on "Cannabis Indica" is very full, as also that on "Chloral."

Under the head of "Acidum Oleacum" the unprinted story of the oleates is told. The article on "Opium" covers twenty-two pages. There are excellent articles on "Physostigma" and "Pilocarpine," "Quinina" appears instead of quinia, and we find on examination almost all the new drugs, with a good amount of information appended, even to Warburg's tincture, except paraldehyde, which is conspicuously absent, as it is from the new British Pharmacopœia. For convenience of reference we have an index of diseases as well as an index of remedies, and the book will be far more useful in its present shape than it ever was in previous editions.

E. W. W.

Correspondence.

LONDON.

(From our Special Correspondent.)

If there be one subject of greater therapeutical interest than another at this season in England, it is the result of the climatic treatment of the past winter upon our patients who are just returning from abroad. You know how greatly dependent we are on foreign health resorts, and how extensively we employ them in the case of diseases of the chest. Your own resources in the matter of climate as a means of cure are practically unlimited in number and variety. Yet you do not hesitate to avail yourselves in many instances of the winter sanatoria of Europe. I propose therefore in this letter to refer to some important aspects of the climatic treatment of phthisis as it is carried on in the higher Alpine valleys.

The value of the treatment of diseases of the lungs by cold mountain air is becoming more thoroughly established every year. Little by little the prejudice which once almost universally existed in favor of warm climates, and against the exposure of consumptives to anything approaching the temperature of ice and snow, has been broken down in the face of positive results which cannot be explained away. When an honest criticism is directed to the question at issue, and the whole character of Alpine winter climates estimated absolutely and relatively, it is found that, after

all, temperature has but little to do with the beneficial results. The ocean at any latitude, the desert of Libya, the prairies of Mexico, all exert an equally beneficial influence on phthisis. No doubt *dryness* of the high Alpine air counts for much. It is impossible for any one belonging to this country not to be struck by the extraordinary dryness of the air of the upper Engadine, or to avoid connecting with this quality the absence of that "raw, searching" coldness of the English climate and its consequences, which make winter so wretched and so dangerous a time with us.

Much the same may be said respecting the *stillness* of the air in these chosen Alpine valleys. The few clouds that are to be seen in the deep blue sky may be slowly driven across the firmament, but as a rule no breath of morning air stirs the snow-laden pines, nor provokes a cough from the consumptive as he bravely paces along the forest road. The exhilarating effect of *altitude* is also considerable; and the same factor is unquestionably powerful in assisting and accelerating the closure of cavities by pulmonary hypertrophy and generally increased activity of the respiratory and circulatory functions. The amount of *sunshine* enjoyed in these high quarters cannot but be invaluable to the ill-nourished, bloodless tissues of the consumptive. Only people like the Londoners, who are now condemned to nearly six months' comparative darkness every year from fog and smoke, can thoroughly appreciate, in my opinion, the precious blessing of sunshine to bodily and mental health.

Still, when we are the most impressed by the importance of these several elements of the mountain climate, there comes back to our mind the supreme value of the ocean, of sea-voyages, of the ocean with its variable temperature, its frequent fogs and rain, its gales and head-winds, and its absolute want of elevation, and we ask ourselves, what is it, then, in common to the ocean, to the mountain, to the desert, and to the prairie that is so precious a therapeutic agent to the *poitri-naire*?

There can no longer be any question but that the most precious element of climate is *purity of the air*. The day is happily now past when we needed to prove this statement. If the surgeon be asked what he considers the most important condition of healing *next to* purity or cleanliness, he will answer unhesitatingly, *freeness of discharge, drainage, absence of unnatural tension*. It may be questioned

whether the physician sufficiently appreciates this second condition of success in the treatment of lung-diseases accompanied by discharge, such as phthisis and chronic bronchitis, although expectorants have been a favorite method of treatment from time immemorial. Unquestionably part of the fever of pulmonary consumption is due to retention in cavities, as all know who have had to do with phthisis in the lower part of the lungs, pulmonary abscess, and bronchiectasis. We long to drain these cavities, and some very promising results in this direction have lately been obtained here by Dr. C. T. Williams, Mr. Godlee, Dr. Cayley, and Dr. Biss. But there are obvious limits both to operative proceedings on the lungs and to the use of expectorants, and it is clear that if we desire to diminish the discharges in phthisis, *we must prevent their formation*. Purity of the respired air appears from these considerations to be in a second way invaluable in phthisis. It is not only "aseptic," but by diminishing suppuration it prevents accumulations and further suppuration and ulceration; it dries the cavities; it promotes healing.

I have not dwelt upon these points for the purpose of writing a lecture on the influences at work in the treatment of phthisis, but to direct the attention of your readers to a matter of great importance in connection with the most famous of Alpine winter stations. I mean Davos-am-Platz. It is now admitted by all authorities that the first element of a proper climate, pure air, is fast disappearing from the Davos valley. This is an alarming fact, and demands our serious consideration. Davos has been too popular. It has been overdone. Its physicians, its most intelligent residents, those who own building land in and about the village, all tell us the same. The universal cry with them is, Send us no more patients; let us have even fewer winter visitors than now. The reason of this cry is not far to seek. You see it in the streets of houses crowded end to end along the roads which less than twenty years ago ran through a single Swiss hamlet; for you know that this means the crowding together of human beings of whom a large proportion are suffering from tuberculosis. Equally serious, the visitor cannot fail to notice that a cloud of smoke hangs over Davos, and he may find at ten o'clock in the morning that he cannot see twenty yards along the main street for fog. The very evils from which we banish our London patients meet them in one of the highest valleys of the Alps! This state of things will

never do. In the interests of Davos, which has proved a blessing to so many poor phthisical patients, it is to be hoped that the place will get a chance of recovering itself.

The remedy is obvious, and fortunately is easily found. We must send our patients elsewhere. Other well-known winter stations must be patronized, and still others discovered, care being taken that, however favorable their situation, the error shall never again be committed of overcrowding and overgrowth. For the present there is no difficulty. Three other most excellent sanatoria can still receive an increase of patients with safety. Of these three St. Moritz is the best known. At the Kulm Hotel, which may be said to still accommodate all the winter visitors at St. Moritz,—a good hundred,—the living and the life generally are such as to give the best results and the greatest possible comfort and pleasure to Americans. The Kulm might be almost described as a modern Bracebridge Hall at Old Christmas, the company thoroughly social, the day's occupations of a robust kind on the snow or the ice, the evening's amusements within the house refined and entertaining.

The Maloia, about eleven miles from St. Moritz, is a place represented by a single large hotel, which in its internal arrangements has, unlike the Kulm, everything that modern science can do to make it unlike an English country house of sixty years ago. It is warmed, ventilated, and lighted in the most complete and successful way that steam and electricity can accomplish. No doubt the Maloia, which so far has attracted but some forty residents in its winter season, has a great future before it.

Wieson is a winter station which can be confidently recommended. It stands on the same river which flows through Davos, but on a steep slope, far above the bed of the stream with its fogs, where the sun strikes powerfully and cheerfully, and from which the snow disappears early and very quickly when the thaw has once set in.

Whilst these sanatoria are ready to receive more visitors, one of the most famous of Alpine health resorts, Pontresina, promises very shortly to open some of its hotels in winter to invalids. The proprietor of the Hotel Enderlin, which is beautifully situated, and furnished with every regard to comfort and sanitary completeness, has intimated his willingness to take a limited number of mild cases of lung-disease next season. With such accommodation, and with the skill and atten-

tion afforded by Dr. Ludwig, its resident physician, Pontresina can be confidently recommended by American and English practitioners.

SMALLPOX IN CANADA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—Kindly allow me to correct an error which has crept into your article on "Sanitary Science" in the June number.

You say, "The outbreak of variola in Canada having been allowed by ignorant and careless municipal authorities to assume such alarming proportions," etc.

The authorities alluded to (Montreal, I presume) were neither ignorant nor careless. On the contrary, they thoroughly grasped the situation as soon as they were notified of the advent of two cases from Chicago. Unfortunately, one of the cases found its way into a large hospital in which there were a number of orphan children unvaccinated. It is generally known throughout America by this time that a large proportion of our population of French origin, excited by antivaccinators, and misled by poorly-educated physicians, who gave a very weak support to vaccination, *if they did not entirely oppose it*, refused point-blank to obey health ordinances, and also to allow their children or themselves to be vaccinated. Thousands of our people—in fact, one section of the city *en masse*—utterly opposed health measures, and it thus became exceedingly difficult to handle what in July and August had already threatened to become a formidable epidemic. Then came the riots, when the houses of the vaccinating physicians and health officers were attacked, and even the offices of the Board of Health in the City Hall.

Removal to hospital and enforced isolation became almost impossible, for, although a strike may be put down by force of arms, and a riot may be nipped in the bud by bayonets, it is somewhat difficult to enforce health ordinances in the same fashion.

Nevertheless, when the worst came, the sanitary authorities were not afraid to use force, where it would best produce a good moral effect. The officials were armed and their number largely increased, the doors of all infected houses were sealed up, and patrols mounted in front and rear. The services of the good nuns were invoked, and the municipal authorities supplied them with thousands of dollars to take provisions and medical comforts to the houses thus isolated. Every case

not susceptible of perfect isolation at home was obliged to go to hospital, and, if the patient would not go peaceably, he was taken by force. It would take too long to explain in detail all the difficulties which surrounded the position from the start. Suffice to say, by the most severe and stringent means one of the most fatal epidemics of modern times was cut short in midwinter, the hitherto most dangerous season for this disease in our Canadian climate. Of the 3164 persons who died up to December 31, 1887 were French Canadians, 181 other Catholics, and only 96 English-speaking Protestants. This tells its own tale so far as vaccination is concerned.

God grant you may never have the same experience in Detroit.

In conclusion, I would like to ask how you would proceed to vaccinate a man or his family against his will? Would you chain him down and do it by force? There's the rub.

Let the members of the medical profession do their duty, and see to the vaccination of the children they bring into the world, and also by giving every assistance to boards of health in their endeavor to popularize vaccination and health measures. A badly-vaccinated population will always be exposed to smallpox epidemics; but with a smallpox hospital always ready, and a stringent law on the statute-book requiring every case, without exception, to be taken to it, *by force if necessary*, boards of health may feel tolerably confident of preventing an epidemic, *always provided they are backed by a good healthy public opinion*, and have not a population to deal with who are violently opposed to vaccination, isolation, and disinfection!

Yours truly,

HENRY R. GRAY,
Chairman Board of Health.

MONTREAL, July 7, 1886.

POTASSIUM PERMANGANATE IN AMENORRHŒA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your June issue is an article on the use of permang. pot. as an emmenagogue, and asking for results. My conclusions after using it in about fifty cases are as follows:

1. It acts with certainty in about seventy per cent. in selected cases.
2. It may be given at any time, but preferably one or two hours after eating, as it is not so apt to sicken the stomach. I don't think it

is any more efficient when given on an empty stomach.

3. I have used the sulphate in a number of cases with less certain effect; the result attained, however, may have been accidental.

4. In most cases it produces an exhilaration of spirits.

5. It has a decided tonic effect.

6. It will become an indispensable therapeutic agent.

7. Its disagreeable effect on the stomach is best relieved by a combination of

Cerri oxalat., gr. i;
Cocaine hyd. chlor., gr. $\frac{1}{4}$;
Bismuth. subnit., gr. v;
Pulv. ipecac., gr. $\frac{1}{8}$. M.
Ft. cachets, one every two hours.

Respectfully,

BENJAMIN MARSHALL, M.D.,
Col. Phys. and Surg., N. Y.
924 SUTER ST., SAN FRANCISCO, CAL.

POTASSIUM PERMANGANATE IN AMENORRHŒA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Having noticed in the THERAPEUTIC GAZETTE of June 15, 1886, an article upon the emmenagogue effect of potassium permanganate with the request appended that any one who had tried it, either successfully or unsuccessfully, would let you know the details of his experience, I record my experience with it. When I first began the practice of medicine I found myself frequently in need of an efficient emmenagogue, and in reality found none, but after years of search I chanced upon this remedy through the experience of some one, and I have been well pleased with its effects as such, but dislike its tendency to irritate the stomach.

CASE V. will illustrate very well its claims as used by me. C—, æt. 18 years, health in every respect good, family history free from any venereal diseases or the manifestation of any transmitted affection; married at fourteen years, conceived, and aborted at the third month of pregnancy; her menses appeared once after and then became suppressed, and so remained for the last two years and over, with occasional head-symptoms. I preceded the permanganate of potassium, as is my custom, by introducing the sound at least three times during the first week of treatment, and puncturing the os tincæ to the depth of from the eighth to a quarter of an inch, then following up with 2-

grain doses in capsules, three times daily, just before meals, for four weeks. I have never used the manganese salts, being satisfied with the above salt. I can cite Case VI., which may be of some interest, in this connection. L—, æt. 19, well made, plethoric, unmarried, breasts well filled out, never menstruated, complained considerably of head-symptoms; treated her as I did Case V., and with satisfactory results in about three weeks. I regard the method as practised by Prof. E. S. Lewis, of the Medical University of Louisiana, of puncturing the os tincæ in two or three different places excellent, causing thereby a hemorrhagic tendency thereto, then follow on with the potassium permanganate. I could cite other cases, but think this sufficient, as I have never met with a failure in treating amenorrhœa or the various forms of suppressio mensium.

Respectfully,

E. E. SMILEY, M.D.

ABNER P. O., KAUFMAN CO., TEXAS, July 2, 1886.

TREATMENT OF RHUS-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your very interesting reply to the query concerning the treatment of rhus-poisoning (vol. x. No. 7, p. 491), you barely refer to bicarbonate of sodium as a remedy; and yet in my own experience, gained in a life-long battle against the infection, being exceedingly susceptible to the intoxication, I have found no remedy which compares with it. Up to 1869 I was an annual sufferer with the trouble. So susceptible was I to infection that I could not come on the leeward side of the plant in the spring-time, especially early in the morning, without suffering. My head would swell until the features were almost indistinguishable, and the suffering was intense, especially if, as was frequently the case, the penis and scrotum were also attacked. During the spring of 1869 my hands became poisoned from contact with a bridle-rein or halter that had been tied around a fence-rail on which grew the rhus. Opening the blisters with a needle, and drying off the exudation with a blotting-pad, I accidentally applied a bit of litmus, and found that the fluid was exceedingly acid. I thereupon sprinkled some bicarbonate of sodium upon the opened pustules, and let it remain a few minutes. I was called into my office shortly afterwards, and, becoming immersed in business, forgot all about what

usually was something that did not allow me to forget it for a moment. To make a long story short, the eruption, instead of spreading as usual, dried up readily; and, acting on this hint, I afterwards used a strong solution of the bicarbonate whenever I was threatened with the poisoning. It has never once disappointed me, and so confident am I of its neutralizing effect, that now I take no precautions to avoid the poisonous plant.

I have since that time used the salt (bicarbonate of sodium) in my practice in similar cases, and, while I find some persons upon whom it does not have the desired effect, in so marked a degree at least, yet its action is sufficiently uniform to entitle it to a prominent place among the "specifics" for rhus-poisoning.

It must be remembered, however, in taking into consideration the claims of any remedy to specific action in this trouble, that aside from individual idiosyncrasies (which play a very prominent part), there are quite a number of varieties of rhus indigenous to the various parts of America, all of them more or less poisonous to certain persons, and all going under the vulgar names of "poison-oak" or "poison-ivy;" and, further, that it is quite within the range of probability that the poisonous principle may be contained in one variety in one chemical shape and in a different one in others.

FRANK L. JAMES, Ph.D., M.D.

St. Louis, July 22, 1886.

TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—As L. B. Parsell, M.D., would be "glad to hear from any of your subscribers in regard to the treatment of the poison of the wild ivy," and having been in the practice of medicine nearly half a century, and having practised for the first half of the time in the country, where I saw in the summer season usually several cases where even the whole surface of the body was swollen and vesicated, I may claim to have had some experience with this affection. In some cases the face was so swollen that the patient was unable to see,—not by coming into actual contact with the ivy, but simply by coming within a few feet of it when the vapor of the dew containing the poison fell upon the person; and having early found a most excellent remedy for this poison, I wish to make it known not only to Dr. Parsell but all whom it may concern.

Finding early in my practice that in the treatment of almost all cutaneous affections, where the skin was inflamed, stimulating applications *soothed* sooner than those supposed to possess the soothing power to the greatest degree, I ventured to apply in all cases of ivy-poisoning the following :

R Olive oil, ℥viii;
Sulph. zinci, ℥ss.

This to be well shaken, and applied when the skin is involved, and the surface covered with old linen cloths. The itching and swelling will soon subside, the whole surface affected seemingly drying up, that is, if the application is made early. If later, and the surface is raw, the zinc will not cause smarting in the least, but heal it up. It is not generally necessary to apply the application more than *twice* before the cure is effected. It is well to wash the dried surface with lime-water to cleanse it about the fourth day, when the case will not require further treatment generally. It is a singular fact that only a few people comparatively are poisoned by the ivy. Some can walk through it, handle it, and even chew it, and suffer no harm from it. In my young days I never feared to walk through a bed of it, or to handle it. I have known whole families to be exempt from the effects of this poison.

J. M. BUZZELL, M.D.

PORTLAND, ME., July 23, 1886.

THE TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE :

GENTLEMEN :—I read with much interest your remarks about the treatment of ivy-poisoning. I have tried nearly all the different remedies you mentioned, with more or less success, and the words, "There is no specific for the cure of dermatitis venenata," are perfectly correct. I have seen many cases of dermatitis venenata, and in my opinion the different remedies acted differently, not on account of the healthy or unhealthy constitution of the individual, but on account of the difference in the plants by which the poisoning was caused.

The two cases under Dr. Morrow's observation, members of the same family, both in the initial features of the eruption, and both submitted to the same treatment, but with different success, are a perfect illustration of my opinion.

I herewith submit a formula which I have used lately, and with more benefit than any

other before. If Dr. Parsell, or any other of my confrères, should give it a trial with the same success I had, I would be glad to hear of it.

R Acid. carbolic., ℥i;
Liquor. ammon. caust., ℥ss;
Ol. olivæ, ℥iii. M.

S.—Compresses to be moistened, and applied every two hours to the affected parts. If the eruption is very acute and painful, cover these compresses with an ice-bag.

H. HAHN, M.D.

HASTINGS, MINN.

PERMANGANATE OF POTASSIUM AS AN EMMENAGOGUE.

To the Editors of the THERAPEUTIC GAZETTE :

GENTLEMEN :—I was greatly pleased with your leading article with the above heading. The views therein expressed coincide with my experience.

On reading the paper by Drs. Ringer and Murrell on manganese in the treatment of amenorrhœa (*London Lancet*, January 6, 1883), I at once wrote to my wholesale druggist for a supply of pills, each containing two grains of the permanganate salt. I have used the drug in scores of cases, both in my private and hospital practice, with the result that I have not seen a single case where I could feel that the slightest benefit had accrued, although the drug in some cases had been persevered with for weeks.

Thus I have been led to doubt the therapeutic value of the drug in this disease. This I have already expressed to several medical friends, who have assured me of good results by its use.

I agree with you that we allow our failures too easily to drop out of sight ; do we not learn more from them than from our successes ? I hope, now that you have opened your columns to your readers for their expression, we may hear both sides of the question, and the therapeutic value of the salts of manganese be placed on a firm basis.

J. FLETCHER HORNE, F.R.C.S., ED.

BARNSLEY, ENGLAND, July 12, 1886.

Notes and Queries.

HYOSCYAMUS IN HICCUGH.

To the Editors of the THERAPEUTIC GAZETTE :

GENTLEMEN :—A short time ago I wrote to you in regard to hyoscyamus as a remedy in singultus, and I can now report another case cured with the extract. Last week I had a

case of a man who contracted hiccough while attending to his business, and had been suffering two days with it when I saw him. At the time I had no hyoscyamus with me, and prescribed an antispasmodic remedy, but it did no good. On the next day I saw him again, when he was in bed with high fever and hiccoughing every minute or oftener. I rolled out half a dozen pills of the ext. hyoscyamus, gave one, and ordered another to be given in two hours if necessary, and a third in three hours if required. The second checked the trouble considerably, and the third pill stopped it permanently.

Very respectfully,

J. A. CULLUM, M.D.

COTTONPORT, LA., July 15, 1886.

*POISONING BY THE LOCAL USE OF
BELLADONNA OINTMENT.*

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—By reading the cases of belladonna-poisoning as reported on pages 313 of the GAZETTE for 1885 and 305 for 1886, three cases that I have seen in my practice in the last eight years have been brought to my mind.

CASE I.—A man, aged about 30, was suffering with dorsal neuralgia. I applied a plaster of belladonna ointment, and it gave him ease in two hours, but in four hours he complained of a choking sensation, his pupils were dilated, face flushed, tongue dry, and pulse rapid. I removed the plaster, had the place well washed, gave opium, and he was all right next day. The skin was not broken anywhere about the location of the plaster.

CASE II.—A lady, æt. 18; tedious labor; water had escaped early, and the os was small and contracted. I took ext. bellad., gr. lx; adeps, ʒi; rubbed them well together; applied the ointment to the cervix on cotton. In one hour my patient complained of choking, face became red, and shortly all the pains ceased. I removed the cotton, gave opium, and, after two hours' rest, labor was completed without any after-trouble.

CASE III.—Lady, æt. 24, the wife of a physician, was under my treatment for vaginismus. I used ext. bellad., gr. xl; sulphate morphine, gr. vi; adeps, ʒss; rubbed this well together, applied it on lint to the vagina, and, after two days' use of it, she began to choke, face got red, and, in short, showed the toxic effect of the drug. But on ceasing the use of it she was well every way, both of the poisoning and vaginismus, and has had no

return of the trouble, and in two days she showed signs of belladonna-poisoning, dry throat, dilated pupils, flushed face; but, after ceasing to use the drug, she was well of both the vaginismus and poisoning.

The last two cases were of much interest to me, as I have never seen anything said about the danger of using belladonna ointment in obstetrics.

Professors Stillé and Maisch say something about poisoning by the ointment being applied to the surface of the body where the skin is broken.

If any of your readers have met with any ill effects of the drug in obstetric practice, I shall be glad to see their reports in the GAZETTE.

Very respectfully,

CHEVES BEVILL, M.D.

WINFIELD, ARKANSAS.

*SUPPRESSION OF PAIN IN LABOR BY THE
LOCAL APPLICATION OF COCAINE.*

An American surgeon, Dr. William M. Polk, was the first to make any report regarding the use of cocaine in operations upon the female genital organs. We believe also that an American obstetrician first reported upon the use of cocaine in labor.

This is denied, however, by DR. M. S. JEANNEL, who, in an article entitled "The Suppression of Pain in Labor by Local Applications of Cocaine," claims that the idea is essentially French, and was first carried out by MM. Doléris and Dubois. These gentlemen, on January 17, 1885, announced that they had applied cocaine locally in eight cases of labor, and in six of them had observed great relief. In September, 1885, Dr. George H. A. Dabbs related his experiences, which were of a similar character, and affirmed that, thanks to cocaine, women could bear children nowadays with very little pain.

Dr. Jeannel (*loc. cit.*) records his observations made during the past year in La Maternité de l'Hôtel Dieu, Saint Eloi. He first applied the cocaine in the form of an ointment with vaseline. He got no results, partly because the vaseline is not absorbed, but mainly, as he believes, because corrosive sublimate injections were made, which drug decomposes the cocaine,—a fact worthy to be borne in mind. Aqueous solutions were then employed, and it was found that a five per cent. solution was sufficiently strong. In the first stage of labor a speculum was used, and the solution painted over the neck and vagina, or

a tampon, saturated with the solution, may be introduced. In the second stage the tampon is introduced directly, without the aid of the speculum, and the liquid should also be carefully applied over the vulva. The operation must be repeated several times.

The pains of labor are due to the following causes, according to Professor Doléris :

First, the muscular contraction of the uterine walls. The pains from this source are usually slight, and cannot be affected by cocaine.

Second, pains are produced by the dilatation of the neck and of the vaginal walls, the nerves of those parts being pressed upon and torn. These pains are relieved to a remarkable degree in many cases by cocaine.

Third, pains of an acute and severe character result from pressure of the child upon the nerve-trunks of the pelvis. Cocaine is powerless to relieve these.

Fourth, some pain is felt from the stretching of and pressure on the mucous membrane. This is suppressed by cocaine.

Fifth, most atrocious pains are produced in the expulsion of the head by the stretching of the vulva and perineum. These, also, according to Doléris and Jeannel, are relieved by cocaine.

The total result of the analgesic application seems to be that in most cases the patient feels but slight pain in the pelvis, and only complains of a dull pain above the pelvis, and pains in the loins.

It yet remains to determine whether the amount of cocaine used is ever sufficient to cause constitutional effects, or to affect the normal contractions of the uterus.

It appears very certain, so far, that cocaine is not so effective or convenient as chloroform, and its claim for adoption must be based on its greater safety and absence of any bad after-effects.

At present the most satisfactory use for cocaine at the time of labor is probably in cases of lacerated perineum. Here a hypodermic injection of a few drops allows the immediate and painless suture of the parts.—*The Medical Record*, July 3, 1886.

THE THERAPEUTIC USES OF CUS.

In looking over the files of our esteemed contemporary, the *Dublin Journal of Medical Science*, for another purpose, we have recently noticed an article on "Cus," commending it as a reliable tænicide, with remarks as to the

method of preparation that yields the most forcible product.

We have no doubt it has been used in this country by patients affected by parasites ; in fact, its association with helminthiasis is, to the minds of many, quite natural, but its employment certainly has not been restricted to that or any other special field. The native product, *C. Americana*, is said to embrace a large number of varieties, and to attain a greater exuberance of development than its congeners of any other clime. In the mining regions of the Rocky Mountains and the Pacific coast, we find the *C. occidentalis*, a variegated and particularly florid specimen. It is used in large quantities, and seems to be applicable to all conditions, much like quinine in the South or whiskey in New York. It is not, however, incompatible with the latter drug. The dose varies greatly. It is usually repeated p. r. n., although we are bound to say that its effect is entirely incommensurate with the popularity of the agent.

The philological reflection, which comes late in the reading of the article in question, that possibly our contemporary may have had reference to the diversely-spelled kousso (*brayera*, U. S. P.), would, of course, vitiate the above description. But, in view of the much greater importance in this country of the agent we have described, we prefer to accept the more obvious interpretation.—*Boston Med. and Surg. Journ.*, June 30, 1886.

OSMATE OF POTASSIUM.

MERCK, of Darmstadt, has prepared the osmate of potassium to obviate the use of osmic acid, which is so irritating to the respiratory organs and so hygroscopic. The potassium compound is said by Wildermuth to have proved beneficial in some cases of epilepsy, the daily dose being one dozen pills, each containing $\frac{1}{4}$ of a grain in combination or alternation with bromide of potassium. A one per cent. solution of the potassic osmate has also been recommended in the treatment of goitre, neuralgia, tumors, and other diseases.—*Lancet*, June 5, 1886.

ALUMINIUM ACETATE AS AN ANTISEPTIC.

In the November number of the *GAZETTE* we published a paper by DR. ROSE as to the value of aluminium acetate as an antiseptic: the statements which he there made as to the sufficient and reliable germicidal and an-

tiseptic properties of aluminium acetate have been confirmed by DR. A. L. CLARK (*Chicago Med. Times*, June, 1885), who found that it was perfectly able to prevent putrefaction, and in several cases where it was used as a dressing for lacerated wounds it served to preserve the wounds antiseptic.

THE PHYSIOLOGY OF FATIGUE.

Alpine and athletic clubs are hardly less interested than the physiologist in the elaborate series of experiments recently made by Drs. Mosso and Maggiora on the laws of fatigue, and described by them in the monograph just presented to the Accademia dei Lincei. These accomplished inquirers began their operations by constructing a mechanism by means of which they could observe the variations of the efforts put forth by a finger in lifting a weight until entire exhaustion had set in. The mechanism was then readjusted in such a way that the operator's whole arm remained motionless, with the one exception of the muscle corresponding to the finger in action. The variations of the muscular effort were graphically traced on blackened paper, and from these tracings it resulted that every individual under experiment gave a special characteristic trace, which at once distinguished his effort from those of the others. Resistance to fatigue was then seen to be different at different hours of the day, and the influence of food upon it was also found to vary. Further, a special study was made of the important problem of the disposing of pauses, so as to make the outlay of force as economical and as effective as possible. The practical importance of these inductions to pedestrians or soldiers on the march is obvious. According to Drs. Mosso and Maggiora, the resulting fatigue is twofold,—the fatigue of nervous failure and the fatigue of muscular failure. In certain cases, the fatigue comes from the collapse of the muscular tissue only, while in others it happens that the brain suspends the supplies necessary to keep the muscles active. Some experiments showed that if a fatigued finger bore a weight with difficulty, the moment the weight was withdrawn the finger recoiled backwards with force,—a proof that while the muscular energy had run out, the nervous energy was striving to compensate it by imposing on the muscle an effort much stronger than necessary. Professors Mosso and Maggiora next describe a series of experiments on the influence of the

weight to be lifted, as well as on that of anæmia. To ascertain the latter, they constricted the arteries of the arm under experiment by impeding the afflux of blood, or they rendered it totally bloodless by encasing it in strong ligatures of gutta-percha. In this condition the muscle was found capable of continuous effort, but only through nervous excitation, while it was observed in what manner the muscular energy revived gradually as the blood returned into the arm. The effects of fasting, and the duration of time that must elapse after the taking of food to re-establish the conditions of normal muscular labor, formed a further series of investigations, in connection with which there was determined the influence of respiration and of those processes of training whereby the organism is inured to bear the heaviest fatigue, as in the case of Alpinists before undertaking a formidable ascent. Finally, Drs. Mosso and Maggiora overhaul afresh the familiar experiments as to what and how great is the influence of certain aliments in the production of labor, whether their action is beneficial or not, confirming by novel methods the induction that alcohol, so far from augmenting muscular energy, positively diminishes it, while other ingesta increase the output of work by substantial reinforcement of the organism.—*Lancet*, June 26, 1886.

COCAINE IN MERCURIAL STOMATITIS.

BOCKHART recommends in the *Monatshefte für Praktische Dermatologie*, No. 2, 1886, cocaine as an efficient remedy for the painful tumefaction of the gums occasionally observed in the course of a mercurial treatment. A ten to twenty per cent. solution of the hydrochlorate of cocaine is to be brushed over the affected part several minutes before meal-time. If the mucous membranes present (mercurial) ulcers, a five per cent. solution of cocaine suffices. The brush is to be disinfected with carbolic acid after having been used, as the solution would otherwise soon undergo decomposition through the agency of the bacteria of the mouth.

WASHING OUT THE STOMACH OF LUNATICS WHO REFUSE FOOD.

DR. E. REGIS, having been asked to give the members of the Bordeaux Medical Society some account of the progress which has been made during recent years in the treat-

ment of insanity, selected a single practical point of great importance, namely, refusal of food, or, as he called it, sitiophobia. This, he remarked, is very frequent in asylums; it is but a symptom only, or rather a complication, not a disease of itself. It is especially common among female patients, and is the rule among subjects of lypemania, or melancholy. It is sometimes seen in mania and alcoholic cases; and, though more rare in general paralysis, is still seen in the depressive or non-grandiose form, the patients believing that they have no stomach, intestines, or mouth, and that therefore they are incapacitated for eating. In patients who believe themselves to be undergoing persecution, and in religious and mystical mania, sitiophobia is very common. The gravity of the condition is not equal in all classes of cases, but it is always to be looked upon as of serious import. In melancholy, it is certainly possible for it in tedious cases to bring on a fatal result by inanition. With regard to the treatment and the manner of carrying on alimentation by force, the speaker reviewed the various plans that had been adopted by Marcé, Esquirol, Baillarger, Leuret, Marchant, Blanche, Fara-bœuf, Billod, Ritti, Sizaret, and F. Raspail, stating that his own preference was for a simple nasal sound of soft rubber, lubricated with vaseline instead of with oil. In addition to forced feeding, M. Regis has, for some years past, been in the habit of washing out the stomach, especially in cases where there were signs of gastric catarrh, which is very frequent among lunatics. For this purpose he used the double current stomach-pump of Kussmaul, and obtained most marked success, which encouraged other physicians to follow his example, with the result of obtaining similar favorable changes in the patients. Of late he has altogether discarded the stomach-pump for a simple Faucher's tube; and he is convinced that, if the washing out of the stomach were to become universal in this condition, a large number of such patients would be very much improved. Even in the case of non-sitiophobic melancholics, this treatment would, he thinks, prove very beneficial.—*Brit. Med. Journ.*, July 3, 1886.

POISONING BY SORREL.

An extremely curious case of poisoning is reported from Birmingham. A few days since, a boy, 5 years of age, ate a quantity of sorrel-leaves, which he gathered at the back of his father's house. During the fol-

lowing night he appears to have complained of giddiness and intense thirst, and to assuage the latter he got out of bed and drank some soapy water which happened to be in a jug on the dressing-table. Shortly afterwards he became unconscious, and died. The medical evidence attributed death to oxalic acid poisoning, resulting from the action of the soap on the green sorrel. This wild plant, which is well known to contain a noticeable quantity of the oxalates, is a favorite with country children, from its pleasant acidulous taste, but it is quite new to find it capable of toxic effects. The theory put forward is certainly ingenious, and, if correct, it does credit to the acumen of the medical witness. None of the works on medical jurisprudence record any deaths from the ingestion of the raw plant, and abroad the cultivated plant is an important and largely-consumed article of food, without producing any untoward symptoms. It is credited with certain aphrodisiac properties, which, when manifested, are probably due to the irritation of the genito-urinary tract produced by undue acidity of the urine.

It would be interesting to have the details of the case, so that one might know on what grounds death was ascribed to the effect of oxalic acid poisoning. Perhaps some of our readers may be enabled to furnish details of similar cases, with some explanation of the alleged action of an alkali in separating the oxalic acid in such a way and to such an extent as to lead to a fatal result. There are plenty of plants capable of causing death which seem to attract children's attention, and it is difficult to avoid a suspicion that the sorrel may not have been alone in producing the symptoms referred to. Of course, from a legal point of view, the exact cause of death is tolerably indifferent, but it is quite otherwise from a medical stand-point, since treatment would naturally require to be adapted to the particular toxic agent which had found its way into the omnivorous stomach of the juvenile prowler.—*Med. Press*, June 23, 1886.

FAVORABLE RESULTS OF PREVENTIVE VACCINATION AGAINST MILZBRAND (SPLENIC FEVER).

The principle of preventive vaccination, as first proposed by Jenner and recently extended by Pasteur and other microbio-pathologists, continues to be productive of practical results which justify no small anticipations. As we learn from a communication of the state veterinary surgeon of Cherson, Russia,

DR. KRAJEWSKI, to the *Centralblatt für die Medicinischen Wissenschaften* (No. 1, 1886), Prof. Zenkowski vaccinated last summer 1333 sheep, of which, after the first vaccination, 1.6 per cent., and, after a second, 0.3 per cent., only perished. The importance of these results is clear enough, when we learn that the usual annual losses from anthrax in Russia are as high as twelve to twenty per cent.

ETHOXYCAFFEINE.

This body is caffeine in which one atom of hydrogen is replaced by the group C_2H_5O . Alkalies precipitate its salts from their solutions. Hypodermic injections in rabbits gave indications of a narcotic action. M. Dujardin-Beaumetz has administered this agent in cases of severe headache, and with beneficial results. Its insolubility is an objection, as is also its tendency, with other allied bodies, to cause gastric symptoms. Most of these difficulties are overcome by dissolving the drug in salicylate of sodium and adding some carminatives. The largest dose given was 25 centigrammes. Guarana and Paullinia owe their value in megrim to their containing caffeine.—*Lancet*, July 3, 1886.

PILIGANINE.

M. ADRIAN has discovered a new alkaloid in lycopodium Saussures. It has an alkaline reaction, and emits white vapors, like ammonia, in the presence of hydrochloric acid. It causes powerful emesis and catharsis.—*Lancet*, July 3, 1886.

THE DANGER OF SYNCOPE IN HOT BATHS.

It is surprising that deaths by syncope during the use of hot baths are not more common than the coroner's court returns would show them to be. The peril of faintness by the mere determination of blood to the surface of the body, thus quickly depriving the heart of its usual normal support and stimulus, is very great. In cases of muscular weakness of the heart this danger must be imminent whenever the "hot" or even the "warm" bath is used. Apart from this obvious risk, however, there is always the possibility that in weakly or too impressionable states of the nervous system the peripheral stimulation produced by the application of heat to the whole of the cutaneous extremities of the afferent nerves may so act on the centres as to

arrest the evolution of energy by an inhibitory influence. It is doubtful whether we lay enough stress on this consideration when prescribing the use of such external agents as act on large areas of surface and strongly impress the nerves there commencing. We know how burns of even moderate severity may kill by the impression they produce on the centres of vitality from the periphery. There is much to learn in regard to the nature and extent of the central effects which may be thus caused. Whether for good or evil, the application of heat or cold to the whole surface is a potent measure, and one that ought not to be recklessly resorted to, more especially in cases of great susceptibility, involving such excitability of the nervous centres as often coexists with fairly good health in a weakly body.—*Lancet*, July 3, 1886.

THE BACTERIA OF GRANULATIONS.

At a recent meeting of the Paris Surgical Society, M. PONCET stated that the bacteria of granulations were studied in 1881 by Sattler. M. Poncet detected in an eye enucleated by M. Dehenne the presence of a micrococcus in the interior and exterior of the granular cells. This investigator also found it in the membrane of Descemet, and in the iris. M. Poncet considered it possible that the micrococci had penetrated into the anterior chamber in consequence of an incision, for iridectomy had evidently been performed. M. Poncet showed drawings representing the position of the micrococcus in the granulation. Sattler's statement that this micrococcus was analogous to that of gonorrhœa, M. Poncet considered to be erroneous. He declares that the former is much larger.—*British Medical Journal*, July 3, 1886.

ELECTION OF DR. BROWN-SÉQUARD TO THE ACADEMY OF SCIENCES.

According to the Paris correspondent of the *Lancet* (June 26, 1886) the portals of the Paris Academy of Sciences have at last been opened to Dr. Brown-Séquard, as he was elected member at its last meeting on Monday, in the Section of Medicine and Surgery. The eminent biologist was elected by a large majority, and the victory was the more creditable as the competitors of Dr. Brown-Séquard were all men of note, in proof of which statement it is only necessary to mention the names of Germain-Sée, Bouchard, Jaccoud, Hayem, and Richet.

— THE — Therapeutic Gazette.

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Original Communications.

A CONTRIBUTION TO OUR KNOWLEDGE OF FEVER, AND THE AGENTS WHICH PRODUCE OR ARREST IT.

BY DRs. H. C. WOOD, E. T. REICHERT, AND HOBART A. HARE.

INTRODUCTION.

THIS research grows out of a statement, which was some time ago made in a German journal, that pepsin injected into the blood would produce fever, and is accompanied by very little discussion of the literature of the subject, because the field which it especially occupies has previously received

little attention. The ultimate object of the research has been to throw light upon the nature of fever and upon the relation of the febrile reactions of the body to organic substances. Of course the literature of fever is enormous; but to have entered upon any general study of it would have carried us far beyond our present intention.

The calorimeter which we have used in these experiments is in most respects similar to that employed by Dr. H. C. Wood in his research on fever, but differs in being designed to take out all the heat absorbed by the air after its entrance into the inner box, and thus to avoid the loss of time in observation and calculation which is involved in Dr. Wood's plan of measuring the amount of

air used and its temperature before and after its exit, and then calculating the heat abstracted by such air. Metal tubes are, in our calorimeter, coiled in the space between the two boxes, where the water is during the working of the instrument; and, as the temperature of the water is kept a little lower than that of the air, any heat absorbed in the central box by the air is given up to the water. In order to test the accuracy of this calorimeter, we devised an arrangement by means of which known quantities of the city gas could be burnt in the inner box with the apparatus set up and the air-pumps at work. Under such circumstances, we find that the water in the outer chamber rises with remarkable regularity with the combustion of equal quantities of gas. We believe, therefore, that the calorimeter used at a temperature of three or four degrees below that of the external air is an instrument of precision, provided that great care be exercised to see that, at the beginning of the experiment, the calorimeter itself is of uniform temperature throughout, and that the water in it is thoroughly stirred from time to time, especially when the temperature is about to be taken.

PART I.—FEVER-PRODUCING AGENTS.

In studying the action of pepsin upon the animal organism, when introduced directly into the blood, we have made use of an article furnished by Hance Brothers & White, of Philadelphia, and also of the commercial "soluble pepsin" sold by Fairchild Brothers, of New York. The symptoms produced have been uniform, but varying according to the amount and to the strength of the pepsin employed; the pepsin of the same manufacturer varying in its activity.

In the dog, when pepsin, rubbed up with water but not filtered, is injected into the blood, death from failure of the circulation may result at once if the dose has been large enough, as is shown by the following experiment:

Experiment 1.—A very small dog.

Time. M. S.	Pulse.	Art. Press. Mm. mercury.	Remarks.
0.	230	140-150	
1.	.....	.....	Began injection of Fairchild's pepsin, 1 gramme in solution; only about half of it was thrown into jugular vein.
1.15	235	150-160	Injection finished.
1.24	.....	80	Pulse cannot be counted, so small. Respirations full and deep.
1.30	.....	75	No pulse. Apparatus so arranged in this experiment that Zero of arterial pressure is 75.

Time. M. S.	Pulse.	Art. Press. Mm. mercury.	Remarks.
1.33	Still occasional deep respirations, but no pulse.

The respiration is also profoundly affected. At first it is excessively hurried, and becomes very full and struggling. There are often at this time violent convulsions. The respiration after a shorter or a longer period of stormy rapidity becomes slow, it may be with great suddenness, and then is abolished altogether. These changes may, especially in the rabbit, dominate the depression in the circulation, and produce a vaso-motor spasm with great rise of the arterial pressure, even at a time when the smallness of the pulse shows the still existing cardiac weakness. As an example of this we give the following experiment:

Experiment 2.—Full-grown rabbit.

Time. M. S.	Pulse.	Art. Press.	Resp.	Remarks.
1.00	230	120	90	Very slow injection of 1 c.c. of water, containing 1 grain Fairchild's pepsin, began into jugular vein.
1.15	250	102	120	
1.24	.....	78	132	Injection finished.
1.30	240	84	210	Directly after injections ceased violent respiratory struggles came on.
1.45	160	60	212	Pulse scarcely to be made out on tracing.
1.50	?	56	180	Pulse not perceptible.
1.57	.....	120	185	Pulse not perceptible.
2.04	.....	.....	.....	Respiration stopped; general convulsions.
2.09	240?	214	none.	Pulse so small and irregular cannot be fairly counted.
2.22	.....	.....	.....	One deep respiration, very full and slow.
2.28	.....	.....	.....	Convulsions continue: during one the canula torn out of artery.
2.30	.....	.....	210	Respirations small, irregular.
2.40	.....	.....	.....	Respirations going on with regularity.

Animal died about fifteen minutes later. A spectroscopic examination of blood drawn just before death showed normal oxyhæmoglobin.

The disturbance of respiration and the convulsions which follow the injection of pepsin are, we believe, due to plugging up by particles of the pepsin of the blood-vessels of the medulla. When Fairchild's pepsin is used they are exceedingly severe, with the article prepared by Hance Brothers & White they are much less pronounced. Even when rubbed with water most carefully, Fairchild's pepsin gives a mixture containing numerous coarse particles, whilst the other pepsin is an almost impalpable powder. Further, we have produced similar disturbances of respiration by injecting very finely-powdered dried meat into the jugular vein, as in the following experiment:

Experiment 3.—Rabbit.

Time. M. S.	Art. Press.	Resp.	Remarks.
0.00	130	84	
0.01	.....	.....	Injection begun of a very small quantity, a grain or two, of meat.
0.09	100	.....	Injection finished. Respiration just stopped.
0.13	75	.....	Respirations renewed.
0.18	170	210	Very irregular and short respirations, convulsive tremors.
0.29	170	.....	Respirations practically none.
0.35	85	.....	Respirations very shallow and irregular.
1.10	100	.....	Only one respiration in thirty seconds.

No attempt at respiration after this, although pressure kept up for one-half minute.

The fall of arterial pressure which follows an injection of pepsin we believe to be due to an influence exerted upon the heart. In Experiment 2 the sudden rise of pressure from 56 to 214, which was produced by arrest of respiration at a time when the pressure had fallen from 120 to 156, shows that the vaso-motor system is not affected until very late in the poisoning.

When the amount of solid pepsin introduced at one time is not large enough to produce such profound result as those we have chronicled, but still is sufficient to cause death in a very short time, the animal becomes quiet and excessively weak; the bodily temperature falls, and death occurs in general asthenia. When small amounts of the pepsin are employed, there may be a decided shivering fit, lasting fifteen minutes to half an hour, in which the animal tries to get near the fire, and seems to be suffering from a sensation of coldness. This condition is succeeded by fever, lasting some hours, which, on its gradual subsidence, leaves the animal in apparent good health; or, if the dose has been properly proportioned, hæmaturia and excessive purging come on, and the animal dies in collapse.

Our next efforts were directed towards finding out what it is in commercial pepsin which produces the symptoms. The hæmaturia we at first supposed was due to a digestion or destruction of the blood-corpuscles by the ferment. But we have experimentally determined that in the blood of the poisoned animal the spectrum is that of normal oxyhæmoglobin, and that when blood is digested with pepsin outside of the body, at a temperature of 100° F., for twelve hours, there is no alteration of the spectrum, and no disappearance of the red disks or appearance of their débris. Comparative studies made with Mannassein's blood-counting apparatus of the blood-cor-

puscles, before and after the digestion of the blood with the pepsin, and careful microscopical examinations failed to show any alterations in the number or character of the corpuscles.

When the pepsin powder was injected into the blood death was produced by a few grammes, but if the pepsin were thoroughly rubbed up with water and filtered, the filtrate, which, of course, contains the active pepsin, could be injected, in quantities representing twenty grammes of the commercial pepsin, into the jugular vein of small dogs, without producing fatal results. We have also never been able to cause bloody diarrhœa or hæmaturia with this solution, and we therefore believe that the hæmaturia and bloody flux are the results of infarctions in the kidneys and intestinal walls, such infarcts being due to the minute solid particles of the commercial pepsin.

In order to determine whether it is the soluble or insoluble portions of commercial pepsin which produce the fall of arterial pressure, two experiments were made with a clear liquid obtained by rubbing up Fairchild's pepsin in water, and filtering through a double filter. The experiments are as follows:

Experiment 5.—Very old dog; weight, 12 pounds.

Time. M. S.	Pulse.	Art. Press.	Remarks.
0.	135	140-160	
1.	130	140-160	Began injection of 10 c.c. saturated solution.
1.15	208	110-115	Injection finished.
1.10	300	75-80	
1.50	300	80-90	Injected 10 c.c. as before.
2.	330	60-70	
5.	236	135	

Experiment 6.—Very old dog; weight, 20 pounds.

Time. H. M. S.	Pulse.	Art. Press.	Remarks.
12.10	216	140-150	Injected 12 c.c.
12.10.10	.....	.....	Injection finished.
12.10.10	300	70-100	
12.10.25	.....	75-90	
12.10.50	.....	80-100	
12.11.30	.....	120-180	
12.30	140	140-165	Injected 1 gramme of Fairchild's pepsin rubbed up in water.
12.30.05	192	98-105	
12.33.30	192	120-130	

These experiments indicate that the depression of the arterial circulation, caused by an injection of commercial pepsin, is largely

the result of the mechanical action of its insoluble particles. A hasty large injection of filtrate does produce a temporary fall of arterial pressure, but this is speedily recovered from, and, in truth, does not occur when the injection is practised with only moderate rapidity, unless very large amounts of the filtrate be used. At the same time, when solid pepsin is used, the effect upon the circulation varies greatly, and embolism of the coronary artery of course suggests itself as a plausible explanation of the cardiac failure when the action is excessive.

The pepsin fever is produced by the injection of the filtrate from commercial pepsin, as is shown by the following experiments, which have been, we may add, frequently repeated with consonant results :

Experiment 7.—October 20 ; carriage-dog ; weight, 23 pounds.

Time. M. S.	Rec. temp.	Remarks.
9.20	104.6°	Injected 25 c.c. of a strong filtrate from concentrated pepsin.
12.30	105.4°	Vomited several times before twelve o'clock.
1.45	106°	
3.	104.5°	

Experiment 8.—October 24.

Time. M. S.	Rec. temp.	Remarks.
9.50	104.3°	Filtrate from 7.5 grammes of concentrated pepsin.
10.15	.....	Shivering fit.
2.	107.3°	

Experiment 9.—October 26 ; small yellow pup ; weight, 10.5 pounds.

Time. M. S.	Rec. temp.	Remarks.
11.50	104.2°	Injected 40 c.c. of filtrate from 11 grammes of Fairchild's pepsin.
12.45	107.4°	Dog quiet.
1.45	108.3°	

Experiment 10.—October 26 ; dog.

Time. M. S.	Rec. temp.	Remarks.
11.15	104.4°	Injected filtrate from 11 grms. of commercial pepsin.
1.	106.8°	
1.40	105.4°	
3.15	104.2°	

The rapid development of fever after pepsin injections, and the absence of any signs of a catalytic action in the blood, suggested to us that it is not the pepsin itself, but something contained in it, which causes the fever.

We therefore made the following experiments, in which the ferment was destroyed by boiling :

Experiment 12.—October 29 ; yellow dog ; weight, 16 pounds.

Time. M. S.	Rec. temp.	Remarks.
10.45	104.4°	Injected 110 c.c. of filtrate from 11 grammes of concentrated pepsin which had been boiled for ten minutes.
11.50	104.4°	
3.45	106.3°	

Experiment 13.—October 30 ; brown bitch pup.

Time. M. S.	Rec. temp.	Remarks.
9.25	103.7°	Injected filtrate from 12 grms. of pepsin which had been boiled for ten minutes.
11.4	108.4°	
1.	108.8°	
2.	107°	

These experiments have been repeated a large number of times with uniform results. They undoubtedly prove that the pyrogenic agent in commercial pepsin is not the pepsin itself, but some contaminating principle.

Having determined that the poisonous principle of commercial pepsin is not the ferment, it was our next endeavor to discover, if possible, the nature of the poison.

On adding to the boiled and filtered solution of pepsin an excess of strong alcohol a copious precipitate was obtained, which, when dry, yielded an amorphous substance entirely soluble in water. Experiments were then made with this material to determine its physiological properties. The principle itself, as will hereafter be shown, is of the nature of a peptone. The experiments are as follows :

Experiment 14.—Dog ; weight about 10 pounds.

Time. M. S.	Remarks.
10.05.	Rectal temperature 105.8°.
10.10.	Injection into the jugular of 0.5 gramme of peptone.*
10.15.	Dog excessively weak, apparently dying.
10.45.	Rectal temperature 103.5° ; the dog still very sick and apparently dying.
11.	Dog improving very decidedly.
11.10.	Improvement still continues.

* One ounce of Hance Brothers & White's concentrated pepsin, which we understand contains fifty per cent. of sugar of milk, yielded about ten grains of the dried peptone. If dried at too high a heat, a portion of this peptone becomes insoluble in water, and the toxic power is correspondingly diminished.

Time. M. S.	Remarks.
11.45.	Dog worse; unable to stand; has passed a little bloody serum from the bowels. There appears to be slight dyspnoea. Rectal temperature 98.1°.
11.55.	Dog dead.

Experiment 15.—Dog.

Time. M. S.	Remarks.
10.30.	Rectal temperature 106.5°; injected 0.11 grm. of peptone which had been digested for ten days in absolute alcohol and then dried. This peptone was one-sixth of that which had been obtained from 20 grammes of concentrated pepsin, and therefore represented about 3½ grammes of pepsin.
10.35.	Dog has been vomiting; is very weak, and can scarcely walk; respiration deep.
11.38.	The dog seems to be dying; has Cheyne-Stokes's respiration.
11.05.	Rectal temperature 106.9°; the dog much improved; is breathing normally.
11.45.	Dog is quiet, but not so depressed; temperature 107.9°.
12.45.	Rectal temperature 107.9°.
2.45.	Rectal temperature 107.9°.

Experiment 16.—Weight of dog 42.5 pounds.

Time. M. S.	Drug.	Art. Press.	Pulse.	Rec. temp.	Remarks.
12.21	.....	190-210	144		
12.21.10	Peptone	180-200	150		
12.21.20	0.05 grm.	166-180	300		
12.27	.....	140-160	138	.....	Dog quiet.
11.29	.....	160-168	144	.....	Breathing labored, respiration hurried.
12.32	.....	170-174	132	.....	Absolutely quiet.
12.35	.....	170	138		
12.35.10	0.15 grm.	170	120	.....	Injection begun.
12.35.20	.....	170-190	168		
12.35.30	.....	194-174	132	.....	Violent breathing.
12.35.50	.....	184	120	.....	Injection ended.
12.40	0.2 grm.	184-168	.....	.....	Injection begun.
12.40.10	.....	192	114	.....
12.40.50	.....	180-190	.....	.....	Injection ended.
12.46	0.2 grm.	186-190	132	105.5	Injection begun.
12.46.20	.....	200	.....	.....	Injection ended.
12.47	.....	.....	.....	105.7	
12.50	.....	190-194	.....	106.	
12.54	.....	220-200	78		
12.54.10	.....	210-190	78	106.2	
1.02	0.2 grm.	190-202	.....	106.2	Injection begun.
1.01	.....	196	72	.....	Injection ended.
1.15	.....	180-190	108	105.8	
1.25	.....	.....	.....	105.5	Blood coagulating well. Dog killed.

These experiments prove that the material which we obtain by the precipitation of a boiled and filtered solution of commercial pepsin is the pyrogenic poisonous principle of the pepsin; and, also, that when this principle is injected into the blood in certain amount it produces very distinct fever, without a pronounced effect upon the arterial pressure; but that when larger quantities are employed a condition of excessive asthenia is at once produced, accompanied by a very marked

fall of the bodily temperature, and soon ending in death.

We have determined that the pyrogenic principle of commercial pepsin is of the nature of a peptone. It yields a perfectly clear solution with water, which has a neutral reaction. The peptone gives the following reactions:

Boiling, no effect.

Proteid color-reactions. — Xanthoproteic, good.
Millon's reagent, good.
Biuret's, good.

Mercuric chloride, good.

Ferric chloride, none.

Cupric sulphate, none.

Neutral lead-acetate, good.

Tannic acid, good.

Absolute alcohol, a precipitate soluble in water.

Strong nitric acid, none.

Strong acetic acid, none.

Strong hydrochloric acid, none.

This peptone also gives a very slight precipitate with ferrocyanide of potassium and strong or dilute acetic acid. And thus has some resemblance to the α peptone of Professor Meissner, from which it differs in yielding a much smaller amount of precipitate with reagents just mentioned. For it we propose the name *pepsin-peptone*.

It has been suggested by a friend that the poisonous principle of commercial pepsin is allied to sepsin, obtained in 1868 by Drs. E. Bergmann and O. Schmiedeberg (*Centralbl. für Med. Wissens.*, 1868, 497) by a complicated process from decayed yeast. The work of these investigators was gone over by Dr. Anton Schmidt (Thesis, *Das Sepsin*, Dorpat, 1869), who obtained the sepsin as a pure snow-white crystallized substance, of which 0.025 gramme was sufficient to kill a very large dog. It is plain that sepsin is of the nature of a ptomaine, and that it differs absolutely from the substance which we obtained in that it is soluble in alcohol, whilst pepsin-peptone was procured by precipitating it from its watery solution by the addition of alcohol. Pepsin-peptone also differs in a similar way from the poisonous principle which Professor L. Brieger (*Zeits. f. Physiologie Chemie*, vii. p. 277) obtained from ordinary peptone by extraction with alcohol. It is of course very probable that Brieger's extract was of the nature of a ptomaine.

The results of Brieger suggest the possibility that pepsin-peptone owes its poisonous prop-

erties to the presence in it of a contamination. To discover if possible such contaminating substance, we digested a specimen of the pepsin-peptone with amyl alcohol, filtered, and evaporated in a capsule to dryness, when a mere trace was left. On similar treatment with chloroform, petroleum ether, amyl alcohol, sulphuric ether, nothing was dissolved. The failure to obtain any organic crystalline principle by these solvents seems to us to prove that the pepsin-peptone which we used is free from ptomaine. That the residue which was left after the evaporation of the ethyl alcohol is not the poisonous principle is shown by the fact that in Experiment No. 15 the pepsin-peptone which was used had been digested for ten days with a great excess of alcohol, which must have removed from it everything soluble in that liquid.

In order, however, to make a further test of the matter, basic acetate of lead was added to the solution of pepsin-peptone in distilled water. A white flocculent precipitate formed, but redissolved upon the addition of more of the basic acetate. To this solution ammonium hydrate was added, and the white precipitate which fell was collected on a filter-paper, washed with water, separated from the filter-paper, and suspended in water. Sulphuretted hydrogen was then passed through the water to precipitate the lead. The sulphide was filtered off, and the filtrate evaporated on the water-bath to dryness. The residue was very small in amount, was not crystalline, and on testing was found to be largely composed of lactose.

The filtrate obtained from the precipitation of the basic acetate of lead by ammonia was warmed, and sulphuretted hydrogen passed through it until all the lead in it was precipitated. The solution was then filtered, and the filtrate evaporated to dryness slowly on a water-bath. A considerable quantity of a brown gummy mass containing minute crystals was obtained. On testing physiologically this mass it was found to be active. Twelve centigrammes of it injected into the jugular vein of a small cat produced a rise of temperature of nearly three degrees.

The crystals obtained in the final product of the studies just reported were believed to be ammoniacal. It is plain that if the peptone itself should come out of this process it would be in the final mass obtained, and that unless the peptone be entirely destroyed this mass would be physiologically active. The fact, therefore, that this mass was active is no evidence whatsoever that the crystals were of

the nature of a ptomaine, or were the original poison.

The method of obtaining the final gummy mass was such as to strongly indicate that the crystals in it were ammonium acetate, formed by the decomposition of the basic acetate of lead by the ammonium hydrate. In order positively to prove this, we added the basic acetate of lead to a fresh solution of pepsin-peptone until a clear liquid was obtained, warmed this liquid, and passed sulphuretted hydrogen through it until no further precipitation occurred, filtered, and evaporated the filtrate to dryness; the gummy mass left contained no crystals. As the process through which the pepsin-peptone was put was identical with that by which the crystals were obtained, except in the addition of ammonium hydrate, it is a necessary inference that these crystals were an ammoniacal salt.

That certain peptones when introduced into the blood act as poisons is not an altogether new idea. In the *Archiv f. Phys.*, 1880, Dr. Adolf Schmidt-Mulheim announced the fact that large quantities of ordinary peptone thrown into the blood of the living animal prevent its coagulation, and, at the same time, lower very greatly the arterial pressure by, as he believes, but does not prove, a direct paralyzing influence upon the walls of the blood-vessels. Along with the fall of the blood-pressure great restlessness appears, soon followed by muscular weakness, and, finally, paralysis of the limbs. In the last stages of the poisoning secretion of urine is arrested and convulsions may occur. Influenced by the statements of Schmidt-Mulheim, M. Winckler, a Bavarian veterinarian, proposes, in the *Archiv f. Wissen und Praktische Thierheilkunde*, 1883, Bd. lx. p. 419, a theory to account for the "subacute cerebritis" frequent among horses in certain parts of Germany.

This disease appears to be closely allied to the so-called *loco* disease which is common in domestic animals in certain districts of the Western United States, and which is usually attributed to one or two species of the genus *Astragalus*. In Germany the affection under consideration is believed to be the result of excessive feeding upon certain leguminous plants, which plants are, however, not poisonous. Parallel to this are the results of experiments which we have made with *Astragalus* sent from the far West, as *loco* or *crazy weed*. The extracts of these plants we found to be entirely inert. Winckler believes and apparently proves that the symptoms of the so-called subacute cerebritis are not the result of

any brain inflammation, but are the outcomes of a constitutional affection. He also believes that the poisonous principle which causes this disease is a peptone formed in the blood by the action upon its fibrin of the ferment which was discovered as an abundant principle in leguminous plants by Gorup-Besanez, who also found that it has the property of forming peptones with fibrin. The theory of Winckler is that when an animal feeds on an excess of these leguminous plants there is sufficient absorption of this ferment to form in the blood a peptone, which is the cause of death. The *Astragalus* of the West is a leguminous plant, and probably contains the ferment of Gorup-Besanez. If the theory of Winckler be correct, the loco disease is probably also a peptone-poisoning. Unfortunately, Mr. Winckler does not prove the truth of his theory. He simply by general considerations renders it probable. As the loco disease is a matter of very great importance to the stock-raising interests of this country, a research should be made upon this point. It would be a very simple matter to determine the truth or falsity of the theory of Winckler.

The importance of the poisonous properties of peptone is much enhanced by the fact that these compounds have been found to be produced in the internal organs during certain diseases. E. Salkowski obtained a peptone from the liver of a patient dead of leucocythemia (*Virchow's Archiv*, 116), an observation which has been confirmed by Bockendal and Landwehr (*Virchow's Archiv*, Bd. lxxxiv. p. 561). Salkowski also found peptone in the spleen, the liver, and the kidneys of a case of acute yellow atrophy of the liver (*Virchow's Archiv*, Bd. lxxviii. p. 394). Sotnitchewsky (*Zeitsch. für Physiologie Chemie*, Bd. iv. 217) finds that peptone is constantly present in the lungs of persons dead of fibrinous pneumonia; whilst M. Muria (*Virchow's Archiv*, Bd. ci.) asserts that these principles can always be discovered in the viscera of animals killed by phosphorus, and has obtained them in quantities from the liver, spleen, and uterus of patients dead of puerperal fever. Finally, Fischel (*Archiv für Gynakologie*, Bd. xxiv.) finds that the peptones are constantly formed during involution following childbirth.

It is a growing conviction with clinicians that many of the symptoms which accompany various acute constitutional disorders are not produced directly by the germs or other poisonous agents which are the immediate cause of the disease, but are caused by substances which are formed during the vital

processes provoked or altered by the original poison. There has been also a tendency to believe that these secondary poisonous principles are usually of the nature of alkaloids belonging to the so-called class of ptomaines. Our experiments of course do not, in any way, disprove the existence of ptomaines, or their activity for evil. They certainly indicate, however, very strongly that the pyrogenic poisons of these constitutional affections are at least, in some cases, peptones. It has been proven that peptones are pyrogenic agents, and that at least some of them act when present in very small quantities. It has also been proven that peptones are found in the viscera of persons dead of various constitutional disorders, and it is very probable that these peptones during life pass into the blood and exert a powerful febrifacient influence upon the organism.

(To be continued.)

*LANOLIN, A NEW FATTY SUBSTANCE;
ITS PHYSICAL PROPERTIES AND
THERAPEUTIC USES.**

BY PROF. OSCAR LIEBREICH, BERLIN.

AT the present time the object of experimental pharmacology is twofold: on the one hand we have to investigate remedies which have already gained a fixed position in practical medicine, while, on the other hand, we must study products which have been made the subject of experimental and pharmacological inquiry, but which have not yet been tested practically.

It is this experimental pharmacological method which more especially claims my attention, and I am of opinion that it is a most important mode of investigation; at the same time, I readily admit that the results of clinical experience must never be lost sight of.

The principal aim which I have in mind is to make not only abstruse physiological or chemical experiments, but to turn these experiments to account in the light of my pharmacological studies. Even those which appear to have a purely theoretical interest become the origin of practical discoveries.

Pharmacology must unite with all those branches of medicine, and pursue an exact experimental course. There can be no doubt that products obtained by the pharmacological method must inspire more confidence than

* Read before the British Medical Association at the recent meeting at Brighton, England.

those which are simply introduced by empirics.

There is a great difference between recommending a drug which has been studied from a pharmacological point of view, and only introducing it in order that it may be tried in practice without previous experiments. In the latter case a certain substance is introduced, and the decision on its merits is left to those who try it on their patients and who judge by the results of their statistics.

One of the branches of pharmacology which has been most neglected is that which refers to drugs used in the treatment of skin-diseases.

In consequence of our pathological studies into the nature of diseases, the local treatment has become more and more important.

The method which I have employed, and the substance itself which makes the subject of my paper, are so simple, that I should be unwilling to occupy your time to present to you some important considerations which will have soon to be studied by anatomists and physiologists. These studies may lead to new discoveries concerning the composition and metabolism of our body.

I wish to speak to you of a substance which I have called lanolin, the biological importance of which I have already had occasion to mention in this country.

Lanolin is a cholesterine fat, which differs from the ordinary fat of the *pamisculus adiposus* through its containing, instead of glycerin, the brilliant crystals of cholesterine, which are so well known to every microscopist. Besides cholesterine, these fats contain other substances which are similar to cholesterine, but which have nothing in common with glycerin. In order to give you an idea of the differences which exist between these two sorts of fat, I may mention that cholesterine fats are not decomposed by boiling with alkaline solutions,—that is to say, they do not form soaps; while, on the other hand, glycerin fats are easily split into soap and glycerin when treated in the same way. The decomposition of glycerin fats into fatty acids and cholesterine, or cholesterine-like substances, can only be produced by the action of a strong solution of alkali in alcohol. We have, therefore, to deal with a very stable chemical compound.

I have found yet another difference between these two sorts of fat. Lanolin absorbs water very readily. By simply stirring together a cholesterine fat and water, more than one hundred per cent. of the latter can

be incorporated with it, and a soft yellowish mass is formed, which is the lanolin properly so called. I have named *lanolinum anhydricum* the cholesterine fat deprived of water. Neutral glycerin fats, vaseline and petroleum fat, do not absorb water, or only absorb it in very small quantity.

Lanolin can be extracted from the fat contained in the wool of sheep; this fat when unpurified is called wool oil.

It has been known for a very long time among the agricultural and cattle-breeding populations, and its old designation was *œsypus*.

I could not, without taking up too much of your time, give you the history of this *œsypus*. I shall simply tell you that *œsypus* was already used in the time of Herodotus. Dioscorides describes the preparation of *œsypus* from wool, and his description is reproduced in most of the pharmacopœias published up to the eighteenth century.

It was also used by the ancients as a cosmetic, and Ovid mentions it in his *Ars Amatoria*. The Roman ladies anointed their faces and skin with *œsypus* brought from Athens, and this in spite of its repulsive nature. Lanolin continued to be employed during the Middle Ages, as Milton has pointed out to us. He has found the *œsypus* mentioned in the Sloane edition of Hieronymus *Scascatorius*.*

œsypus was bound to be abandoned, as the impurities which it contained, especially rancid fatty acids, often produced irritation through the skin. Many substances, called by fantastic names, have been recommended as substitutes for *œsypus*, but they all contained fatty acids, and many impure substances of this nature have been produced since my researches, and the name lanolin, which I have introduced for a definite substance, is improperly applied to them. In my opinion the best method consists in separating the lanolin from its emulsion by centrifugal action. The emulsion must be previously sterilized by the action of heat and alkalies. Distillation can, unfortunately, not be used, as it causes a partial decomposition and an increase in the quantity of fatty acids. When lanolin was first introduced by me I recommended that it should be mixed with fat; but I am pleased to be able to withdraw this opinion, as I have succeeded in removing from lanolin the sticky

* Hieronymi Scascatorii, Syphilis sive morbus galliens, Londini, 1884 (publications of the Sloane Society). Interea si membra dolor convulse malignus Torqueat CEsypo propra lenire dolorem mastichinoque olio.

cholesterine fats. It has thus become possible to obtain a substance which, in the state of lanolinum anhydricum and of lanolin, possesses the necessary softness. Referring to what I said in the beginning of my communication, I must now examine if lanolin is, unlike vaseline and fats, a substance similar to the fat contained in the skin and keratinous tissues.

My researches have led me to believe that it is always present wherever keratinous tissue is formed.

As to the origin of this cholesterine fat, it may be asked whether it is secreted by glands or formed simultaneously with the keratinous tissue. I can answer that the horny tissues are full of lanolin even where there are no glands to produce it. The degree of brilliancy and elasticity of the horny tissue is in direct proportion to the amount of lanolin contained in it. I must not forget to say, that some researches made by French experimenters have been of great interest to me while I was working on the subject. Berthelot* has shown many years ago that it is possible to combine synthetically cholesterine and fatty acids. He has also foreseen that this fat might be found in nature. I have found that the researches of Hartmann have brilliantly confirmed those of Berthelot. I have, moreover, shown that lanolin is nearly always present in keratinous tissue.

On the other hand, Ranvier has discovered in the skin microscopical fatty globules, which have been called by him eleidin. We can also mention in this place the very important investigations of Waldeyer. We have here, possibly, the beginning of a series of researches which may lead ultimately to a more exact knowledge of the formation of lanolin in the cells of the skin. I say, therefore, that the constant presence of this fat in keratinous tissue, and the discovery of the substance itself, are the true therapeutical indications.

I have first of all shown that lanolin can be rubbed into the skin with great ease. When this rubbing is repeated several times the skin becomes distinctly softer. This application of lanolin to the skin has been found very useful for massage by Dr. Ewer.† It is a

great advantage that lanolin does not require to be removed with soap and water after massage. I may mention also that the easy penetration of the skin by lanolin explains the good results obtained with it in seborrhœa sicca. It stands to reason that the permeability of the skin varies in different persons; it is evident also that an epidermis already saturated by its natural lanolin cannot be impregnated with more fat as easily as a dry epidermis. Dr. Pawlowsky has therefore recommended to free the skin from its natural fat by means of ether before using the lanolin. There is no doubt that gray ointments prepared with lanolin are preferable to the ordinary ointments. This is the opinion of the well-known authority in Aix-la-Chapelle, Dr. Brandis.‡

It is certainly better to draw conclusions from a few carefully-observed cases than from statistics, which are more or less misleading in cases of this kind.

The following may prove interesting. One of my colleagues in Berlin prescribed to a patient an inunction of gray ointment made with lanolin. He observed already after two inunctions an irritation of the skin and the apparition of acne pustules. Wishing to enlarge my experience, I examined the ointment, and found no trace of lanolin in it. The chemist admitted that I was right, and said that a mistake had been made. After the disappearance of the skin eruption neutral carefully-prepared lanolin mercury ointment was used, and no return of the irritation was observed. I took special interest in a case of sycosis vulgaris, which had been wrongly diagnosed as parasitic sycosis. The patient, a young man of 19, had suffered five years from the disease, and had been treated without success not only by all the usual means, but also by a preparation of lanolin. The latter, however, was of bad quality, and a rapid improvement took place as soon as the pure substance was employed. I could mention to you many other cases in support of this view, but I think that the unirritating nature of lanolin is already generally admitted.

I wish now to make a few observations concerning the absorption of drugs through the skin. It must not be supposed that a substance applied to the skin, even in combination with lanolin, can be absorbed as quickly as through the intestine. It is also necessary to remember that a comparatively large quan-

* "D'après diverses observations il ne paraît pas impossible que quelques-uns de ces éthers, le composé stéarique notamment, existent à l'état normale soit pathologique dans l'économie animale." Berthelot, *Chimie organique fondée sur la synthèse*, tom. i. p. 161. Paris, 1860.

† Die Anwendung des Lanolins bei der Massage.—*Deut. Med. Wochen.*, July 8, 1886, Berlin.

‡ Behandlung der Syphilis. Berlin: Hirschwald, 1886, 3d edition.

tity must be applied externally in order to produce the same general effects as a small quantity given by the mouth: the dose of mercury, for example, must be sixty times larger when used in the form of the ordinary gray ointment than when administered internally. Although lanolin mercury ointment is more readily absorbed than the ordinary one, it is quite certain that the quantity of mercury used must be much larger than what one would give internally. I must now explain shortly, why absorption through the skin is slow. The superficial layer of the skin is the stratum corneum; then comes the stratum lucidum; then the granular layer, in which lanolin is probably formed; then the deep cells of the epidermis; and at last the papilla, with one vascular loop. When fat is rubbed into the skin, it finds only this one loop through which it can be absorbed. In the intestine, on the contrary, every villus contains numerous blood-vessels; hence the great difference in the power and rapidity of absorption.

I must end with a few remarks on a point of importance concerning the use of lanolin, which shows very evidently the difference between it and ordinary fat. When lanolin is used on mucous surfaces it never forms a scab; this has been, I believe, first noticed by B. Fraenkel, of Berlin. It may be explained in the following way: lanolin has a great affinity for water, and this peculiarity explains why it adheres intimately to mucous membranes; fat and vaseline, on the contrary, remain separated from the mucous surface by their natural watery secretion.

It would lead me too far if I were to consider in detail the distribution of lanolin in the body, but I have reason to believe that it is found not only in the keratinous tissues but also in the blood, liver, and other organs; never in the *pamisculus adiposus*. Further researches will elucidate this question.

It has been objected to me that lanolin, which was known to the ancients and used for centuries, would not have been abandoned if it had been really useful. To this I answer, that what they used was *œsypus*,—that is to say, impure wool oil, which has many disadvantages and dangers. I cannot, therefore, lay too much importance on the fact that pure neutral lanolin must be used; not those substances which are sometimes falsely called lanolin, but which are in reality only impure acid wool oil, or products of distillation which contain still larger quantities of acids.

We see something analogous in the case of

opium, after it had been used in the form of electuarius theriaca,—that is to say, of an impure compound of opium. It fell into discredit for a long time, partly also through prejudice, and you know that Paracelsus was the first to reintroduce it in its pure state under the name of laudanum.

Thus in lanolin I introduce to you a substance which, like many others, is old as history in its primitive forms, new as our most modern research in its derivative form. To transform the old, to apply to it the alchemy of science, to purify it, and to utilize it for the benefit of mankind, this is our aim. This has been my labor. I have the ambition and the belief to have rendered a service to humanity. A new fatty substance, neutral, miscible with water, highly absorbable by the skin, is a desideratum. Such is lanolin, which I introduce to you, and for which I predict a long career of great usefulness in the dermatological therapeutics and in the hygiene of the skin.

TEA AND ITS ALKALOID, THEINE.

By THOS. J. MAYS, M.D., PHILADELPHIA, PA.

THE tea-plant is a shrub growing from twenty to thirty feet high, and is indigenous to the southern part of Asia, but is extensively cultivated in China, Japan, and in South America, as well as to some extent in the United States. Its use as a beverage dates from a very early period in Chinese history, but the Greeks and Romans knew nothing of it, and it was only introduced into Europe about the year 1657. The botanical origin of tea is *Thea Bohea*, *T. viridis*, *T. sinensis*, and *T. assamica*, and a few hybrids; and the many varieties of tea in the market are prepared by selecting young or old leaves, and subjecting them to various processes of treatment. Thus, green tea is obtained from young leaves, which are roasted over a wood-fire for a few hours after being plucked; and black tea is made by allowing the leaves, after being gathered, to lie in heaps for ten or twelve hours, and undergo a slight fermentation, and then are slowly dried over a charcoal fire (Blyth). Hyson, Young Hyson, Gunpowder, and Imperial are the most popular kinds of green tea, and Oolong, Pekoe, and Souchong are the best-known black teas.

The chief constituents of tea are an essential oil, boheic acid, tannin, and *theine*, the last of which is the active principle of the

plant, and exists in very nearly the same proportion in both varieties of tea.

Tea was probably first used as a medicine. It is a very interesting fact that the development of most civilized countries is associated with the history of certain plants which have originally been employed in the form of hot infusions in cases of ailments, and afterwards became domestic beverages. Our own mountain tea (*Gaultheria procumbens*), and the New Jersey tea (*Canothus Americanus*), and other plants are instances of a similar kind. Then, again, poor or insipid water, or scarcity of food, may be the means of leading people to employ hot vegetable infusions for the double purpose of making their drinking fluid more palatable and healthful, and of extracting any nutriment or stimulus that may exist therein. The former object is well exemplified by the inhabitants of the northern portion of China. The river Pehio, which flows through this part of the country, is so heavily laden with vegetable and animal impurities that it emits an offensive smell. This water the Chinese never drink except in the form of tea, and then they secure entire immunity from its unhealthfulness.

It is very strange that customs which survive centuries, and which are apparently of entire insignificance, should in a latent state contain an important germ of truth. This is strikingly true of tea. Never having received a great deal of scientific investigation, it was not believed to possess much more virtue than that which it furnishes as a stimulating beverage; yet from a very remote period moist tea-leaves have been regarded as a very valuable local application by the popular mind. It is a common practice in our own day, especially in inflammation and injury of the eyes, face, etc., to apply tea-leaves for the purpose of reducing the local inflammation and the abnormal sensibility. It was after such reflections, about a year ago, when everybody, like myself, was infatuated with the idea of discovering a new local anæsthetic, that I began to investigate the physiological action of theine, and soon found that its pain-relieving power was no less remarkable when introduced beneath the skin than was that of cocaine when applied to the surface of the body. Not only was its analgesic action well demonstrated by these experiments, but the important fact was also developed that its physiological action was markedly different from that of caffeine, with which it was hitherto considered identical.

During the time and after my first experi-

ments were made, I was unaware that theine and caffeine were manufactured indiscriminately from tea, coffee, kola-nut, or Paraguay tea, and that they were sold out of the same bottle, and labelled according to the desires of the customers. Inquiry, however, soon established this fact, and a complete review of my former work became, of course, necessary. What I then used for theine was undoubtedly theine, for it so happens that it is cheaper to manufacture the alkaloid out of tea than out of coffee; hence very nearly all the theine and caffeine in the market is theine. The nature of that which I used for caffeine is more uncertain. It could not have been pure theine, for in that case I could not have obtained the varying products which I did, but it may have been theine mixed with caffeine.

In view of this unsatisfactory condition of the ordinary theine and caffeine for experimental purposes, Mr. William Harris, of Philadelphia, manufactured both alkaloids for me from tea and coffee, respectively, and quite recently I received the same alkaloids made from the same source from Merck, of Darmstadt. After investigating these preparations very thoroughly, I found that the difference in their physiological action is greater than I was led to suspect in my earlier experiments.

Theine and caffeine were investigated experimentally by Aubert, Albers, Amory, Bennett, McKendrick, Burnett, Léven, and others, and, with a single exception, they all concluded that they are identical in their action, but not one of them succeeded in finding the anæsthetic property of theine. This, I think, can only be explained on two grounds,—first, that they used the same alkaloid under different names; second, if they employed separate alkaloids, their methods of investigation were not sufficiently accurate to show the special action of each agent. Léven, who it appears experimented with the separated and genuine alkaloids in 1868, showed that theine produced convulsions in frogs, while caffeine did not; and that the lethal dose of theine was larger than that of caffeine. This is confirmed by my own inquiry. From my experiments on frogs, which will not be given here in detail, I drew the following conclusions:

They agree in the following—

1. They first affect the anterior extremities.
2. They diminish respiration.
3. They produce hyperæsthesia during the latter stage of the poisoning process.

They differ in the following—

1. Theine principally influences sensation, while caffeine does not.

2. Theine produces spontaneous spasms and convulsions, while caffeine does not.

3. Theine impairs the nasal reflex early in the poisoning process, while caffeine does not, if at all, until in the very last stage.

4. The lethal dose of theine is larger than that of caffeine.

I hope the above indicated differences will be obvious enough to convince even the most sceptical that theine and caffeine can no longer be regarded as identical, so far as their physiological action on the frog is concerned. In order to show to myself, as well as to others, that there was a decided difference between the two, and that I did not practice any unconscious self-deception, I frequently tested the contents of two numbered vials, one of which contained theine and the other caffeine, but which were only known to me by their numbers, and I never failed to designate the true nature of each specimen after testing its action on the frog. This is, indeed, a crucial experiment, and it very clearly demonstrates that the toxicological tests of experimental physiology are more accurate and delicate than those of physics and chemistry combined.

The argument which has been advanced against my deductions that the theine and caffeine employed by me were probably not chemically pure, must, I think, fall to the ground, when it is taken into consideration that precisely identical results were obtained from two separate manufactures of both alkaloids, against neither of which the charge of contamination can be brought. In the early part of my experimental review I did use preparations of both which were not altogether free from the coloring-matter of the plants, but I found the same differences as those which were brought out subsequently by the purer specimens. However, if the objection of impurity is still urged, it is incumbent on those who make it to manufacture such specimens of both alkaloids which will satisfy their ideal of purity, and have them subjected to a proper test for the purpose of finding out whether they fail to give a differential physiological reaction.

Enough evidence has now been adduced to show that theine and caffeine, while they have properties in common, also differ so widely in others that their separate manufacture becomes imperative in order that they may be more fully investigated both physiologically and clinically; and it further teaches that a knowledge of the chemical constitution of a substance is a very feeble and misleading guide to its physiological action.

The action of theine and caffeine on man in a separate state has not yet been sufficiently studied to draw any comparison between them, and it is quite obvious that, owing to the promiscuous manufacture of the two alkaloids, it is very difficult to decide whether, in the so-called cases of caffeine poisoning, the effects were due to theine or to caffeine. My own experiments on man with theine show that the subcutaneous injection of moderate doses (one-third of a grain) produce numbness of arm and hand below seat of injection; a feeling of coldness; an occasional disturbance of the temperature in the member under its influence; a slight reduction in the pulse-rate; no impairment of motion; and no intoxication of the brain. The anæsthesia was much more marked in some individuals than in others, and the temperature disturbance was irregular. Out of four cases in which the temperature was tested, it showed no difference in one, and in another one the uninjected hand was slightly higher (0.4° Fahr.) in temperature than the injected one. In two there was quite a marked fall in temperature,—one 0.8° Fahr. and the other 1.2° Fahr. in the hand of the injected arm than in that of the uninjected one. And, strange to say, the hand which showed the greatest depression in temperature experienced the least anæsthesia.

Physiological investigation therefore demonstrates that theine possesses the power of producing anæsthesia, and clinical experience has already proven that this property is sufficiently potent to be of the most marked advantage in the treatment of painful diseases.* In addition to the cases there detailed, I have since then treated many varied kinds of pain with the greatest satisfaction. Not only have I found it efficacious in all cases of neuralgia, but it is equally curative in many cases of pain in the extremities of rheumatic origin, lumbago, etc. It also gives unmitigated relief to the intense pains and local spasms which are met during the progress of locomotor ataxia. I have also known it to modify very markedly the pains incidental to carbuncle and to other inflammatory processes. It does not only relieve the pain, but indirectly also improves locomotive power.

The action of theine is almost entirely limited to the region below the seat of injection. There can be no doubt that after its introduction it enters the general circulation and is

* See my article on "The Analgesic Action of Theine," in the *Medical News* for April 17, 1886.

conveyed throughout the whole body, yet, so far as my experience extends, there is not the least evidence to show that in man it affects any portion of the body above the seat of its injection unless it is given in immoderate doses. In virtue of this localized action theine possesses a marked advantage over other anodynes. Morphine, atropine, and their analogues chiefly exert their influence through a central and not through a peripheral action; hence the after-effects which so often follow the employment of the latter agents is absent in theine, and must not be left out of account in making up an estimate of the comparative value of these remedies.

The consumption of tea is enormous. Great Britain alone consumes eighty million pounds annually, and the United States about seventy million pounds in the same time. It is evident that an agent used on such a gigantic scale must either confer a benefit or an injury on the whole civilized world; hence it is of great interest to inquire into its probable effect on the human economy. Much has been written and spoken on this subject. Quite recently Dr. Bullard, of Boston, read a paper on "Chronic Tea-Poisoning"* before the Suffolk District Medical Society, which elicited very favorable comments both from the meeting before which it was read and from the medical press, and if the conclusions reached in his paper can be fully substantiated it necessarily follows that tea is a *most insidious* poison, and should be expunged from the list of our hitherto unsuspected and innocent beverages. I think, however, that the importance of the subject demands that the data upon which the argument of the paper is founded should be exposed somewhat to the light of sober criticism before the deductions derived therefrom are ultimately accepted.

Dr. Bullard bases his statistics on an examination of one hundred and sixty-three dispensary patients who were supposed to suffer from the toxic effects of tea, and for the sake of comparison he takes as a standard the symptoms which were attributed to the poisonous action of tea by Dr. Morton, who had investigated the symptoms and conditions of five tea-tasters, and also tested the action of tea on himself as far back as 1879.† Dr. Morton concludes that the continued and immoderate

use of tea led to headache, vertigo, ringing in the ears, tremulousness, nervousness, exhaustion of mind and body, with disinclination to mental and physical exertion, increased and irregular action of the heart, dyspepsia, diminution of the amount of urine and of urea, and retardation of the metamorphosis of tissue. Now, these conclusions, we have a right to assume, are based on conditions found in persons who were most certainly exposed to the almost continuous influence of tea, and here, if anywhere, typical symptoms of tea-poisoning should be found. Therefore, with no inclination to demand a yield under the color of authority, we are entitled to ask of Dr. Bullard that when he renders judgment against an agent of almost universal consumption, it shall be done in accordance with the standard which he erects for his guide. This he evidently failed to do, for, of the most prominent symptoms laid down by Dr. Morton as being indicative of chronic tea-poisoning, less than one-half of the cases tabulated showed the least trace. Thus, of headache, only thirty per cent. suffered; of vertigo and ringing in the ears, none; of nervousness, forty-two per cent.; of exhaustion of mind and body, etc., eight per cent.; of palpitation of the heart, forty-two per cent.; of dyspepsia, fifty-two per cent.; while the most important and the most certain of all the physical signs noted by Dr. Morton, viz., the diminution of urine and of urea, are left entirely out of contemplation by Dr. Bullard. But even these figures become very seriously impeached when it is considered that one hundred and fifty-one of the one hundred and sixty-three persons examined were females; for it is a very notorious fact that the great majority of that sex, especially among dispensary patients, are liable to headache, nervousness, palpitation, dyspepsia, etc., whether they drink tea or not.

But the most serious fallacy in the paper seems to me to be the small quantity of tea which is supposed to be capable of producing such toxic symptoms. Out of sixty-eight patients complaining of tea-poisoning noted by Dr. Bullard, thirty-nine drank from two to five cups of tea a day only, and twenty-nine from five to eight a day,—an average of 4.8 cups per day. Now, if we allow one-third of a grain of theine to each cup of tea (which is certainly a very liberal allowance), the average amount of theine imbibed per day by the first series of cases was not quite one and two-thirds grains, while the latter series consumed from two to two and two-thirds grains of theine per day.

* *Boston Med. and Surgical Journal* for April 8, 1886.

† "Toxic Effects of Tea," by Dr. W. J. Morton, in *New York Medical Record* for July 12, 1879.

These figures entirely contradict my own observations in the hypodermic use of theine. Since I became interested in a study of the physiological and clinical action of this alkaloid, I have found that one-half of a grain constitutes a moderate and an ordinary sufficient dose as an anodyne in neuralgia, but I frequently inject as much as two and one-half grains without experiencing anything except the happiest results. To one patient, who was suffering from the most intense neuralgia of both lumbo-sacral and left cervico-brachial plexuses, which was accompanied by sleeplessness, spasm of the muscles of both legs and of those of the left arm, I gave two and one-half grains of theine subcutaneously in four different localities along the spine, with instantaneous relief to the pain and the induction of sleep during the following night. This amount was injected daily for twenty-one days in succession, at the end of which time he was almost entirely free from the pain, improved in appetite and sleep, and felt better in every way. In another case of locomotor ataxia, I injected two and one-half grains of theine in different spots along the spine every other day, chiefly for the purpose of relieving the pain and contractions in the extremities, as well as the constriction around the chest. It removed all these difficulties, and made the patient feel more comfortable than before.

The transparency of the argument becomes manifest at once, when we consider that two and one-half grains hypodermically are at the very lowest calculation equivalent to ten grains given by the mouth; and if this amount can be given with perfect immunity at one time, as in the cases just cited, how can two and two-thirds grains, which was the largest amount of theine imbibed by any of Dr. Bullard's patients, produce any toxic symptoms, and that, too, when it is taken in divided doses during the course of twenty-four hours?

That tea is not such a poisonous agent as one would infer from reading Dr. Bullard's paper, is also confirmed by Dr. C. L. Dana,* of New York, who, following the investigations of Dr. Morton, already alluded to, made similar inquiries regarding the influence of tea upon tea-tasters, and he was led to form conclusions diametrically opposed to those of Dr. Morton, and which materially vitiate the truthfulness of the standard with which Dr.

Bullard compared the symptoms of his patients. In all, Dr. Dana examined ten persons who were engaged in that pursuit, five of whom were old men, had been in the business for more than half of their lifetime, some of whom tasted from two hundred to four hundred cups of tea in a day, and in none of these cases—all of which, according to Dr. Dana's statement, imbibed about four grains of theine daily—was there the slightest evidence of tea-poisoning. The late Dr. Beard † also investigated chronic tea-poisoning, and found that his results were in complete harmony with those of Dr. Dana.

I am sorry to see room for so much fault-finding in a paper on which a great deal of time and labor has obviously been bestowed; but in the interest of fairness to an agent which is a household pet in almost every family in the land, I feel called upon to make the above adverse remarks, not in the belief, however, that tea-drinking has no poison-line, but that Dr. Bullard has far undershot it. Moreover, I trust that he will realize this, and renew the research in the near future with the same but better-directed enthusiasm that he displays in the present work.

1716 CHESTNUT STREET.

THE ESSENTIAL NATURE AND SCIENTIFIC THERAPEUTICS OF CHOLERA INFANTUM.

BY F. C. HERR, M.D., OTTAWA, KANSAS.

"ALL science," says Emerson, "has one aim, namely, to find a theory of nature. Whenever a true theory appears it will be its own evidence. Its test is that it will explain all phenomena."

In the kaleidoscopic history of medical science it has been the fate of theories to rise and fall in rapid succession. What to-day is deemed adequate to the ends of scientific medicine, to-morrow is cast aside as inadequate to that end and worthless. This want of permanency in medical theories offers a very ready explanation of the present uncertain and chaotic state of therapeutic science. The patient labors of many investigators have extorted from nature's storehouse a multitude of facts, which, if properly interpreted and applied, might give us a comprehensive theory of medical practice. "Of what use," says Dr. John Tilt (*Change of Life*, p. 61) "is a great array of facts in medicine unless they

* See Dr. Dana's paper in *N. Y. Med. Record*, January 24, 1880.

† "Nervous Exhaustion," by Geo. M. Beard, p. 151.

lead to a sound theory explaining their production and preventing their occurrence. Stones only cumber the ground till the architect puts them in place."

Perhaps no graver subject could enlist the attention of the physician than that which concerns the health and life of infants during the hot summer weather. The frequency and the fatality of cholera infantum, as well as the uncertainty of therapeutics in controlling its history, invest it with profound interest, and mark it as a subject requiring careful investigation. Whatever of misgiving and of ill-success may be reputed to the past in our relation with this disease, it is obvious to the writer that the present outlook threatens to revolutionize old hypotheses and old modes of practice, and yield results which will justify the declaration that "cholera infantum is *now* a manageable disease."

The present senior editor of the THERAPEUTIC GAZETTE long ago paved the way for a more enlightened practice within the scope of febrile diseases, and it seems clear to the writer that any scientific classification of disease must assign cholera infantum to the group of pyrexias. It may go a long time before this view will become the accepted doctrine with the profession, but facts are daily accumulating which fortify this opinion, and its ultimate acceptance is assured beyond the peradventure of a doubt. Tennyson has well said, "Science moves, but slowly, slowly, creeping on from point to point." Smallpox has lost its terrors through the power of prophylaxis in vaccination. Hydrophobia has been handicapped by the experimental researches of Pasteur, and one by one will these mortal foes of health come within the limit of controlling power. But we *must* break the moorings which link us to the ancient philosophy of our art. The medical practitioner who draws the inspiration of his therapeutic power from text-books will find a sad sequel to his summer's experience with cholera infantum. The recognized therapeutic resources of the past have been painfully ineffective in their application to this disease, and this inefficiency grew out of mistaken conceptions regarding the etiological and pathological basis of the disorder. The popular belief has been the professional belief in respect to the causation of cholera infantum, and the practice has been in accordance with this belief, namely, that food and dentition were the active factors in the production of cholera infantum. I own that food may be the sole excitant of morbid action in the gas-

tro-intestinal system, but food alone does not originate that morbid entity which we designate cholera infantum. Keating says (Archives of Pediatrics, May, 1885), "We have varieties of disease dependent on the character of the food, and others upon the condition of the individual;" and Trousseau declares (Clinical Medicine, vol. ii. p. 456), "Indigestion will be caused and maintained which will lead to diarrhoea, and this diarrhoea, again, under certain circumstances will become the starting-point of cholera infantum." It would be interesting to know just what circumstances Trousseau here refers to, as it is obvious he does not regard food a potential factor in the etiology of infantile cholera. Out of the importance which has been accorded this food consideration as an elementary factor in the causation of this disease has grown the doctrine that the effectual prophylaxis of cholera infantum demands a judicious, well-regulated, and proper dietary. Dr. Samuel S. Adams says (Archives of Pediatrics, May, 1885), "I am convinced that many more children would be saved during various meteorological changes if more attention were paid to alimentation as a prophylactic measure." It would be a work of supererogation to urge the importance of careful feeding in these diseases of child-life. The theme has been over-written time and again, and Dr. Adams himself says (*loc. cit.*, p. 270), "If I were content to quote the best authorities on pediatrics, I could fill the pages of the largest medical journal with the most diversified opinions of men we have learned to venerate, and in the end find that each of our authorities claimed success for his method of feeding." The tendency has always been too much in the direction of exalting into perilous prominence the dietetic factor in the production of these affections. Engrossed with this thought, other lines of thought were shut off, and progress necessarily retarded.

We have never correctly apprehended the nature of cholera infantum, either as a pathological entity or in its etiological relations. The alimentary derangements which constitute a large part of the symptom-picture of cholera infantum do not compose the essential primary disease. The initial point of the morbid process is outside the alimentary system, and the phenomena of exhausting diarrhoea and emesis are consecutive in the chain of pathogenetic action. Whatever relation food does sustain to the affection is the relation of irritation, of aggravation, rather than that of causation. In this point of view it

does not lose any of its importance, but it serves to enlarge our conception of the real rôle which it does play. Day after day, week after week, and month after month the same system of methodical feeding is practised with tender infants by tender mothers for the avowed purpose of saving the little ones from the tortures and dangers incident to careless feeding. Suddenly, without premonition, the infant is seized with violent symptoms of cholera infantum. The physician is hastily summoned. He comes, looks wise, feels the pulse, takes the temperature, and asks, "What has the child eaten?" thus implying the probable accountability of food for this sudden manifestation of disorder. The systemic disturbance is profound, and Trousseau (Clinical Medicine, vol. ii. p. 455) has well said, "The local lesions in cholera infantum are insufficient to explain the profound disturbance of the whole system." The clinical history of the affection clearly shows that, as a morbid entity, it comprises more than a mere derangement of the gastro-intestinal system. In the interpretation of the phenomena which characterize the disorder, what importance shall we attach to the profound enervation, the stupor, the sunken eye, the depressed fontanelle, and the general pallor? Are not these phenomena far more grave than the diarrhoea and the emesis? Do they not denote a measure of disorder which mere diarrhoea and vomiting do not produce, and does not a scientific, comprehensive explanation of all these phenomena refer them to the same proximate cause? We must extend our researches in the sphere of life-phenomena, study more closely the relationship between physiological and pathological processes before we can answer all the complex inquiries which the subject suggests. What Drs. John Tilt and Hanfield Jones have done for the diseases of women in their studies of the pathology of the ganglionic nervous system, it remains for some student of pathology to do for these diseases of childhood. To slightly paraphrase a sentence of Dr. Tilt's, I may say that cholera infantum should be thought of as having its *fons et origo* in the ganglionic nervous system. Dr. Goodhart affirms (Diseases of Children, p. 62) that "the sympathetic system is so involved in cholera infantum as to allow the transudation of serum from the blood-vessels into the intestines, and lead to alterations in the functions of the heart, lungs, and kidneys." This same involvement of the sympathetic system permits transudation of serum into the ventricles, and leads to alterations in the func-

tions of the brain. In the Fisk Fund Prize Essay (by C. E. Banks) for 1879 it is shown that the brain is seriously involved in cholera infantum, and that there is present usually a marked degree of peripheral vascular injection of the brain substance. Hartshorn says (Reynolds's System of Medicine), "Undoubtedly many cases of so-called chronic inflammation of the bowels, as of other parts, consists really in non-inflammatory hyperæmia or passive congestion, the result of vaso-motor paresis, and consequent relaxation and distention of the vessels without exudation, although with altered secretion and increased epithelial desquamation." As long ago as 1866, Meigs and Pepper advanced cogent reasons for regarding the pathology of cholera infantum as a primary affection of the ganglionic nervous system. It has seemed to the writer that in the diarrhoea of emotion is found a happy illustration of the *modus operandi* of the cholera infantum. "The hot bath, by paralyzing the vaso-motor and cardiac inhibitory nerves, will give rise to quickened pulse, with lower tension, frequent respiration, paracardial oppression, giddiness, faintness, and muscular languor" (Bartholow). Charles D. F. Phillips says (Materia Medica and Therapeutics, vol. i. p. 136), "Large draughts of cold water, by giving shock to the abdominal sympathetic, may cause nausea, faintness, actual syncope, and in some cases even death." These references bring to mind familiar experience, and they aptly illustrate how a variety of factors may be potential in exciting the same or identical morbid phenomena. The depression, and weakness, and pallor, and intestinal relaxation, with emesis, which sometimes come with the suddenness of surprise to infants in apparent good health, can be ascribed to no other influence than a parietic condition of the vaso-motor nervous system. Extreme, long-continued elevation of atmospheric temperature, as observed in temperate and tropical climates, supplies all the conditions necessary for the evolution of cholera infantum. The writer, who then resided in Philadelphia, has a vivid recollection of the ravages wrought by high temperature during one week in July, 1876. Five hundred deaths occurred in this week in infants under two years of age. The total mortality from all causes and at all ages often does not exceed three hundred per week. It remains an undetermined question just how far meteorological changes are responsible for these disorders. Dr. James Frederick Goodhart, in discussing the influence which barometric

changes have upon summer diarrhoea, says, "What such reactions may indicate etiologically; how far, that is to say, such conditions indicate changes in the food, and how far act immediately upon the system, it is impossible to say, and, happily for the purposes of therapeutics, though the facts are worthy of recognition, the treatment is unaffected."

This brings me to the consideration of the therapeutics of cholera infantum. If I only had to speak of Dover's powder and chalk mixture, bismuth and ipecac., and mercury with chalk, etc., I should refrain from saying anything in the belief that these matters have been fully written upon by numerous authors. Nor do I propose to discuss at length that large class of agents which have met with favor in the profession by reason of their energetic astringency, or by virtue of their influence over peristaltic action. Except in rare cases, I regard these remedies as contraindicated in the treatment of cholera infantum. Their employment has yielded no results which justify definite conclusions, and in the hands of one therapist simple chalk mixture is the available remedy, while with another the whole range of astringents from bismuth to tannic acid and the salts of lead, are brought into requisition. The evident purpose of all these agents is to modify intestinal peristalsis, and control serous effusion by counteracting the relaxation which is present. To accomplish this end does not meet the purposes of successful therapeutics. In simple entero-colitis, from local irritation, it may be quite sufficient to administer bismuth, or opium, or bicarbonate of sodium with rhubarb, or a solution of morphine with aromatic sulphuric acid, or mercury and chalk with ipecacuanha, and perhaps in some cases strong solutions of nitrate of silver, as suggested by Trousseau. But in the therapeutics of cholera infantum it will be found that these remedies do not meet the pathological indications. They may control the excessive discharges, but they will not correct the disordered nervous system, which is the underlying causal factor in the disease.

It will be found from a careful study of the subject in its entirety that those medicines are most available which, from a study of their physiological action, are found to influence the ganglionic nervous system in the direction of stimulation. If the theoretic consideration of vaso-motor paresis is the essential pathological condition of this disease, then it follows that the indications for treatment are met in the employment of agents which an-

tagonize this morbid state. I may mention in this class of agents the following ones as the more important: aconite, belladonna, arsenic, nux vomica, opium, hydrocyanic acid, caffeine, and cocaine. I am well aware that the employment of these remedies in the treatment of cholera infantum is not the established practice, but it will not for that reason be contended by any one that they are without efficiency. It is obvious that without a clear apprehension of the pathological nature of any disease its therapeutics must be a matter of pure speculation. But here we have an hypothesis which explains all the phenomena of this disorder, and upon it may be builded a practice which will yield the results which science long has sought.

Dr. W. Byford Ryan (*American Practitioner*, May, 1885) says, "The indications for treatment in cholera infantum are, first, to relieve visceral engorgement; second, to maintain capillary action of the entire economy; third, to give tone to the muscular and mucous coats of the bowels; and fourth, to supply proper nutriment." These indications Dr. Ryan believes are largely met by the administration of belladonna, and in my own experience it has yielded excellent results. Belladonna is indicated here by reason of its action antagonizing that morbid process which is expressed in cases of cholera infantum. The diseased action and the therapeutic force of the drug are opposed to each other. The arterial depression, the vascular engorgement, the serous effusion, and great prostration all arise from paresis of the vaso-motor system, and whatever will restore the functions of this system will cure the disease. Dr. Horatio C. Wood says (*THERAPEUTIC GAZETTE*, July 15, 1885), "It is notorious that in our northern cities the infant mortality rises most extraordinarily and most abruptly upon the occurrence of a very hot spell of weather, such mortality being due to the so-called entero-colitis, the symptoms of which may be summed up as high fever, dry tongue and mouth, rapid pulse and respiration, intense thirst and vomiting, purging of greenish watery fæcal or serous matters with undigested particles of food, and more or less apparent evidences of cerebral disturbance, such as insomnia, headache, contracted pupils, delirium, and finally coma. In some of these cases the bodily temperature rises to a point almost reaching the maximum attained in the sunstroke of adults, and we well remember how we used to be taught to explain to the mothers under these circumstances that the disease had gone to the child's head

and was hopeless. They are in reality forms of thermic fever, the intestinal condition being no more a primary condition than is the coma of adult sunstroke a primary condition; if this fact were clearly recognized by our practitioners of medicine the mortality rate in our large cities among children in hot spells would be enormously reduced." "These cases," he continues, "are to be relieved not by calomel or astringents, or any other drug which relieves inflammation of the intestines, but by external use of cold water." Dr. Wood has been a strong advocate of this practice, and I have no doubt he has saved lives where without it death would have supervened. But we have spoken only of belladonna. Aconite holds a rank in no degree inferior to belladonna. In the first stages of cholera infantum it is especially valuable. When the pyrexia is high, the evacuations frequent, and the distress very marked, aconite will afford very prompt and effectual relief. Great caution is essential that too much is not given, else its therapeutic power will be lost in its toxic action. At first sight it may appear a gratuitous assumption to many that aconite should exercise any influence over this disease; but when it is remembered that aconite has a decided influence over the vaso-motor system, producing free diaphoresis, and stimulating the cardiac inhibitory nerves, it is obvious that it meets the indications for treatment. Hydrocyanic acid, by reason of its stimulating action upon the vaso-motor centres, is also valuable in these cases of undoubted paresis of the sympathetic. Dr. W. M. Ewing, of this city, informs me that he derives excellent results from the administration of ergotine in these forms of disorder, and in the limited number of cases in which I have tried it the result has not been disappointing. From its well-known physiological action, it would be indicated in these disorders.

I come now to speak of a remedy which I believe to be new in the treatment of cholera infantum, and one, too, which, from clinical experience, I feel assured will take a high rank as a potent agent for the relief and cure of this distressing affection. I apprehend the average reader will regard this a purely novel rather than a really practical suggestion, but I have no hesitation in saying that with me cocaine has established its claim to a place by the side of any remedy which the therapist may have recourse to. I was induced to try this remedy more than a year and a half ago in the case of my own child. The symptoms which characterized the case were profuse in-

testinal evacuations and vomiting, with great weakness, pallor of the skin, sinking of the eyes, coolness of the cheeks, hands, and feet, increasing frequency of pulse, and slight cyanosis of the face. I administered the sixth of a grain of the salt of the hydrochlorate every two hours with the best conceivable results. Since then I have frequently employed it with equally good results in similar cases. Perhaps I am unreasonably wedded to the remedy, but when I say that during two summers of long-continued extreme temperature I have not failed to cure every case of cholera infantum, I have reason for confidence. Grave a disease as is cholera infantum, its great mortality has been possible only because science had not indicated its rational, scientific treatment. We have in cocaine an agent which meets a double indication; it is a stimulant to the ganglionic centres, and at the same time a sedative to the sensitive gastro-intestinal mucous membrane.

In the THERAPEUTIC GAZETTE for July, 1886, Dr. J. H. Musser says, "A very successful run of cases of cholera infantum treated by the very frequent use of Dover's powder and calomel in small doses, dry on the tongue, has made the writer rely chiefly on these drugs." Who has not tried Dover's powder and calomel in small doses dry on the tongue? Who feels that when *this is done* the resources of science are exhausted? It is because this practice is disappointing and unsuccessful that the writer has abandoned it for a practice founded upon science, and as far removed from empiricism as medical practice can be. Dr. John Tilt says, "Vital acts are never found cut and squared with mathematical precision," but the medicine of the future must diligently seek to eliminate every element of uncertainty, and we will have established an art whose foundation rests upon a science as comprehensive as nature.

HYOSCINE HYDROBROMATE AS A HYPONOTIC IN PRIVATE PRACTICE.

BY FRANCIS L. AND JOHN R. HAYNES, M.D.,
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"Facts, sir, facts!"—GADGRIND.

THIS paper is based on the administration of 338 doses of hyoscine to fifty-seven persons.

In some instances little or no effect was noticed after hyoscine, but generally one or more of the following symptoms occurred:

1. Delirium, rambling or muttering, with hallucinations of vision, resulting in attempts to grasp imaginary objects. Otherwise, it was not attended by marked muscular movement, the patient being generally contented to lie in bed.

2. Sleep, sometimes apparently natural, sometimes disturbed.

3. Intense reddening of whole face, with sensations of heat affecting the entire body.

It was not determined whether the temperature was actually elevated in such cases. Following the analogy of belladonna-poisoning, where we have noted a temperature as high as 103° , it seems probable that hyoscine-poisoning of this type is also associated with fever. But belladonna-poisoning is associated with dryness of the skin, while hyoscine does not check perspiration, though we have not noticed that it increases the activity of the sweat-glands.

Pallor of the face was seen much more frequently than flushing.

4. Muscular weakness, sometimes extreme.

5. Headache, sometimes affecting the entire cranium, sometimes frontal, and sometimes confined to region of inter-parietal suture.

6. Dryness of the throat and mouth.

7. Dilatation of pupil, with blurred vision.

The most remarkable variation was noted in the symptoms in different individuals, and, sometimes, in the same individual. This variation was but little influenced by the size of the dose. Thus we administered, personally, on the same day, under very similar circumstances, equal doses to two women (Cases 14 and 28): one was poisoned, the other fell into a pleasant sleep. In Case 26, gr. $\frac{1}{100}$ was followed by sleep, while gr. $\frac{1}{8}$ produced delirium; in Case 17, gr. $\frac{1}{100}$ produced delirium, and gr. $\frac{1}{8}$ was followed by sleep.

We have divided our cases, roughly, into the following classes:

1. Hyoscine produced sleep, fifteen cases.
2. It produced delirium, thirteen cases.
3. It was without marked effect, or was followed by various symptoms, twenty-nine cases.

As the result of our experience, we feel constrained to state that we consider hyoscine extremely unreliable as a hypnotic, and that it should not be used in general practice, except in cases in which other hypnotics have failed.

In the few instances where the alkaloid was used for other purposes, the results were not decisive. In one case of asthma (29) it did good; in another (52) it aggravated the patient's sufferings. Used to overcome the untoward effects of morphine in one case (10) it acted charmingly; in another (42) the results first noted were nullified by subsequent

experience; and in a third (11) the combined bad effects of both drugs were shown.

Merck's hyoscine was used, except in a few instances, when that of M. L. C. Marquart was given (Cases 13, 15, 16, 46, 47, 54, 55, 56, and 57). Generally we administered the drug personally, and, in all cases, the greatest care was taken both in dosage and in the report of the effects. During cool weather, a solution containing ten per cent. of alcohol was well preserved; but, in summer, in order to prevent confervoid growths, the alkaloid was dissolved in pure alcohol (gr. $\frac{1}{100}$ to $\frac{1}{100}$).

I. HYOSCINE PRODUCED SLEEP.

1. Female, aged 19, marked insomnia from profound anæmia.

Hyoscine, gr. $\frac{1}{100}$, at bedtime gave seven hours' refreshing sleep. This was repeated sixteen times, at intervals, with similar effects, to the great benefit of the patient.

2. Female, aged 19, last stage of phthisis.

Hyoscine, gr. $\frac{1}{100}$, in daytime, produced sleep for one and one-half hours; gr. $\frac{1}{80}$, three and one-half hours. Repeated twelve times, with similar effects.

3. Female, aged 60, insomnia from old age, bronchitis.

Hyoscine, gr. $\frac{1}{100}$, at 7 P.M. Fell asleep at 7.30, and slept most of night; gr. $\frac{1}{80}$, next day, produced sleep for an hour. Repeated ten times, with similar results. She thought the drug relieved her cough.

4. Male, aged 45, gastric catarrh and severe headache, produced by drink.

Hyoscine, gr. $\frac{1}{8}$, at 7.30 P.M. Fell asleep at twelve, and awoke at six; well.

5. Male, aged 52, delirium from drink; almost sleepless for a week; hallucinations of vision, hiccough, vomiting.

First night.—Hyoscine, gr. $\frac{1}{4}$, in divided doses, was given between 3 P.M. and 12 M. next day. During this time, he slept two hours, or about as long as during the previous night. Stomach was settled, and his general condition was greatly improved, as the result of abstinence.

Second night.—Hyoscine, gr. $\frac{1}{4}$, in four doses. Slept six and one-half hours, and awoke free from hiccough.

Third night.—Slept about one-half as long as second night, without hyoscine.

Fourth night.—Hyoscine, gr. $\frac{1}{100}$. Slept eight hours.

6. Female, aged 35, confined to bed by miscarriage.

Hyoscine, gr. $\frac{1}{100}$, at 10 A.M. Drowsy all day; slept an hour in the afternoon.

7. Female, insomnia, acute pneumonia.

Hyoscine, gr. $\frac{1}{100}$, at 8 P.M. Fell asleep in fifteen minutes, and slept six hours.

8. Female, aged 35, pharyngitis, causing fever, severe headache, and sleeplessness.

Morph., gr. ii, in three doses, by suppository, given during the night, failed to produce sleep or any amelioration of suffering. Hyoscine, gr. $\frac{1}{8}$, in four doses during next day. Slept very well during most of day and succeeding night.

On second day.—Took gr. $\frac{1}{8}$. Fell asleep in an hour, and slept an hour.

9. Female, aged 25, debility after cholera morbus.

Hyoscine, gr. $\frac{1}{100}$, in eight doses, during day. Slept almost continuously after first dose.

10. Female, aged 55, intestinal colic. In morning she took morphine, relieving pain, but causing (as it always does in her case) severe nausea, vomiting, and insomnia.

To relieve these symptoms, ordered at 9 P.M. hyoscine, gr. $\frac{1}{100}$, in two doses. Immediate relief; slept all night; well in morning. (Compare with Case 11.)

11. Female, aged 25, bronchitis.

Hyoscine, gr. $\frac{1}{10}$, with morph., gr. i, in ten doses, in twenty-four hours. Dozed, but did not sleep; severe nausea; hallucinations of vision.

12. Male, aged 17, convalescing from typhoid.

Hyoscine was given at intervals of several days, always in the morning. After gr. $\frac{1}{100}$, did not sleep as much as usual. After gr. $\frac{1}{100}$, slept three hours more than usual. After gr. $\frac{1}{2}$, did not sleep. After gr. $\frac{1}{4}$ on three occasions, and gr. $\frac{1}{2}$ on one occasion, he slept one and a half hours more than usual. Hyoscine did not modify the profuse sweating, which was one of this patient's symptoms. Twice flushing of the face and dilatation of pupils occurred, once headache, but never any throat dryness.

13. Female, aged 25, insomnia following intermittent. *First and second nights.*—Did not sleep.

Third night.—Hyoscine, gr. $\frac{1}{100}$, was given at 8 P.M., when she felt no inclination to sleep. Fell asleep at 8.30, and awoke at twelve. At 12.30 received hyoscine, gr. $\frac{1}{100}$. Fell asleep at one and awoke at five.

Fourth night.—Hyoscine, gr. $\frac{1}{100}$, at nine o'clock. Fell asleep at ten and awoke at six next morning.

14. Female, aged 40, eighth day puerperium.

Hyoscine, gr. $\frac{1}{100}$, at 1 P.M. The only effect was a pleasant sleep, commencing in fifteen minutes and lasting for three hours, when she was awakened by callers. (Refer to Case 28.)

15. Female, aged 28, phthisis, had recently recovered from severe whiskey-gastritis. Had not had good night's rest for two weeks.

Hyoscine, gr. $\frac{1}{100}$, at 10.30 P.M. Fell asleep at eleven, awoke at three for a few minutes; then slept till five. Vomited. Fell asleep again at 5.30 A.M., and slept until eleven. Felt wretched and vomited freely all day. Refused any more of "that poison."

16. Female, aged 20, insomnia, typhoid.

Hyoscine, gr. $\frac{1}{4}$, in two doses at night, was followed by about three hours' sleep. No ill effects. Had not rested so well for several nights.

II. HYOSCINE CAUSES DELIRIUM.

17. Female, aged 15, acute catarrhal pneumonia; insomnia produced by cough and fever; mind clear.

First night.—Hyoscine, gr. $\frac{1}{100}$, repeated in three hours. Slight delirium all night.

Second night.—Hyoscine, gr. $\frac{1}{100}$, at nine; delirium for four hours; then slept until morning.

Third night.—Hyoscine, gr. $\frac{1}{100}$, with same effect.

Fourth night.—Hyoscine, gr. $\frac{1}{10}$, at eight. Slept from 11 P.M. to 1 A.M. From one to two remained awake, drinking constantly, then fell asleep, and awoke at 5 A.M. No delirium from this dose.

Fifth night.—Hyoscine, gr. $\frac{1}{10}$, combined with morph.,

gr. $\frac{1}{2}$, at seven. Fell asleep immediately, and slept till 5 A.M.

Sixth night.—Slept fairly well, without hypnotic.

18. Boy, aged 9, restlessness due to gastric catarrh.

Hyoscine, gr. $\frac{1}{4}$, in five doses, in six hours. No sleep. After second dose, he began to talk incessantly and irrationally, and to clutch at imaginary objects; he was excited in manner. When placed on his feet, he attempted to walk, but staggered, and would have fallen, if he had not been supported. Redness of face, and dilatation of pupils. Symptoms resembled mild belladonna-poisoning, such as we have frequently seen in children, treated for whooping-cough, by large doses of that drug.

Paregoric, \mathfrak{zvi} , was given in divided doses, but he remained delirious and sleepless for seventeen hours.

19. Male, aged 40, last stage acute tuberculosis.

Hyoscine, gr. $\frac{1}{100}$, every eight hours, until gr. $\frac{1}{2}$ was used; produced no sleep, but very mild, rambling delirium. Then same dose was repeated every two hours, until $\frac{1}{100}$ additional was used. The delirium became more marked, and lasted until eight hours after the last dose, but did not seem unpleasant either to patient or nurse. Morph., gr. $\frac{1}{2}$, had no effect on the delirium.

The same patient took from gr. $\frac{1}{4}$ to $\frac{1}{2}$ of morph. every night for four nights, with the effect of producing pleasant sleep, lasting all night.

20. Female, aged 65, habitual insomnia of old age. Laudanum in large doses produced pleasant sleep; its use had become habitual at one time, but two months before taking hyoscine she had discontinued it.

Hyoscine, gr. $\frac{1}{2}$, in sixteen doses, in two nights, produced no sleep, but mild delirium. On the *third night* slept somewhat without hypnotic.

21. Male, aged 66, cerebral paralysis, insomnia, delirium.

Hyoscine, gr. $\frac{1}{4}$, in four doses, in two nights, had no effect except to make him more delirious.

Morph., gr. $\frac{1}{2}$, with hyoscine, gr. $\frac{1}{4}$, in two doses, made him sleep well, and repetition of such doses served a good purpose until his death.

22. Female, aged 60, bronchitis, insomnia.

Hyoscine, gr. $\frac{1}{100}$, in two doses. No sleep. Delirious all night.

Chloral, gr. xl, in two doses, was given the succeeding night, and, after five hours, produced profound sleep lasting eight hours.

23. Male, insomnia, chronic bronchitis.

Hyoscine, gr. $\frac{1}{4}$, at night, in two doses. No sleep. Slight delirium.

The chloral-bromide-morphine mixture, in moderate doses, produced sleep.

24. Male, acute pneumonia, sleeplessness.

Hyoscine, gr. $\frac{1}{100}$, in seven doses, in twenty-four hours. After first dose he became delirious (hallucinations of vision, rambling talk, kicking and pulling at bedclothes and imaginary objects), and remained so for thirty-six hours. At the twenty-fourth hour, he was ordered morph., gr. $\frac{1}{2}$, and in eight hours (after taking gr. i) fell asleep.

After this morphine, in moderate doses, acted well as a hypnotic.

25. Male, aged 7, cerebro-spinal meningitis (headache, fever, violent delirium, jactitation, absolute sleeplessness, opisthotonos, dilated pupils).

Hyoscine, gr. $\frac{1}{100}$, every three hours, until $\frac{1}{8}$ was taken. Then $\frac{1}{100}$, every three hours, till $\frac{1}{8}$ was taken. No change, except that delirium seemed more marked. Then paregoric, \mathfrak{zss} , every two hours, until \mathfrak{z} was taken. No improvement.

Then moderate doses of chloral, bromide, and morph. produced sleep, and this mixture was used with great satisfaction, for this purpose, until he recovered (about ten days).

26. Female, aged 30, insomnia, acute rheumatism.

After hyoscine, gr. $\frac{1}{100}$, at 8 P.M., slept two and a quarter hours.

Two days after took gr. $\frac{1}{100}$ at 8 A.M., and slept one hour. Three days after, gr. $\frac{1}{8}$, at 9.25 P.M., produced slight delirium, lasting all night. Three days after, gr. $\frac{1}{8}$ at 11.30 P.M. Delirium until 3 A.M., then sleep until 5 A.M.

27. Female, aged 25, insomnia, due to nervousness and anæmia.

Hyoscine, gr. $\frac{1}{8}$, in divided doses, every night for three nights. During this time she did not sleep, but talked constantly, not allowing her room-mate to sleep. I could not determine that she was irrational. She felt so bright after taking each dose that she accused me of giving her a stimulant.

28. Female, aged 30, eighth day of puerperium.

Hyoscine, gr. $\frac{1}{100}$, at 1 P.M. In half an hour, dimness of vision, headache, intense burning sensation of skin, extreme sense of weakness. Then constant, unintelligible muttering. Symptoms had nearly passed away by 6 P.M., and at ten she fell asleep.

29. Female, aged 58, asthma and bronchitis, insomnia.

Hyoscine, gr. $\frac{1}{8}$, at 11 A.M. Slept four and a half hours; then mild delirium for eight hours. Cough and dyspnoea much improved. As she had failed to procure any relief from her previous treatment (pot. iod., with small and frequently-repeated doses of morphine), she was now directed to take hyoscine, gr. $\frac{1}{100}$, every two or three hours. This was so effectual that she was discharged in four days.

III. HYOSCINE PRODUCED NEITHER SLEEP NOR DELIRIUM; BUT EITHER HAD NO EFFECT, OR WAS FOLLOWED BY VARIOUS SYMPTOMS.

30. Female, aged 24, insomnia, neurasthenia.

Hyoscine, gr. $\frac{1}{100}$, every night for three nights; then gr. $\frac{1}{100}$ every night for three nights. Sleep more restless than usual; slept better after drug was discontinued. The eyesight was much impaired.

31. Female, aged 40, sleeplessness from bronchitis.

Hyoscine, gr. $\frac{1}{100}$, every night for eight nights caused restlessness. Slept much better without it.

Morphine in decided doses produced sleep.

32. Male, aged 48.

Hyoscine, gr. $\frac{1}{100}$, at 6 P.M. Remained awake and restless all night.

33. Male, aged 20, insomnia, delirium, typhoid fever.

Hyoscine, gr. $\frac{1}{8}$, had no effect whatever.

Morphine, in decided doses, produced sleep.

34. Male, aged 35, insomnia from excessive mental exertion.

Hyoscine, gr. $\frac{1}{100}$, at night, no effect; gr. $\frac{1}{8}$, at night,

was followed by sleep after one and a half hours, but he was disturbed by dryness of the mouth and throat, and considered that he rested much better without it.

Pot. brom., \mathfrak{z} ii, generally gave this patient a good night's rest, while chloral, \mathfrak{zss} , produced ten hours of profound sleep.

35. Female, aged 35, perimetritis.

Hyoscine, gr. $\frac{1}{100}$, at 10 A.M. No effect.

36. Female, aged 50, dacrocystitis.

Hyoscine, gr. $\frac{1}{100}$, at 10 A.M. No effect.

Second day.—Hyoscine, gr. $\frac{1}{8}$, at 12 M. For three hours felt dizzy and "drunk;" was very talkative; throat extremely dry; eyesight very dim. She was forced to lie down through great muscular weakness, but did not sleep for thirty hours.

Eighth day.—Hyoscine, gr. $\frac{1}{8}$, at 3 P.M. Effects the same, except that she slept after eight hours.

37. Adult, insomnia, typhoid fever.

Hyoscine, gr. $\frac{1}{8}$, at night for two nights. No effect.

38. Adult, insomnia, typhoid fever.

Hyoscine, gr. $\frac{1}{100}$, at night. No effect.

39. Adult, insomnia, delirium tremens.

Hyoscine, gr. $\frac{1}{100}$, at night. No effect.

40. Adult, insomnia.

Hyoscine, gr. $\frac{1}{100}$, at night. No effect.

41. Female, aged 30, puerpera.

Hyoscine, gr. $\frac{1}{100}$, at 11 A.M. No effect except to flush face.

Next day gr. $\frac{1}{8}$ at 10 A.M. She did not think that she slept any more than usual.

42. Female, constant pain from sarcoma uteri.

Hyoscine, gr. $\frac{1}{100}$, was taken at sixteen different times day and night. She said, "It made me helpless; I could not speak or sleep, and felt as if I were sinking all the time."

Morphine stupefies this patient; causes her to doze but not to sleep, and produces cramp-like pains in the stomach and vomiting.

Morph., gr. $\frac{1}{4}$, with hyoscine, gr. $\frac{1}{100}$, produces the same effect as morphine alone, *except that no cramp or vomiting occurs.*

After the above experiments morphine alone was used daily to relieve pain, and it became evident that toleration had become established. No stomach symptoms were now felt, nor was the sensation of helplessness as great as when hyoscine also was used.

43. Female, aged 36, healthy.

Hyoscine, gr. $\frac{1}{100}$, at 3 P.M. had a somewhat exhilarating effect.

After ten days, gr. $\frac{1}{8}$ was given at 7 A.M. Headache, marked muscular weakness, no sleep, but slight drowsiness.

After ten days, last experiment repeated with same result. The body temperature was taken every hour; it remained normal.

44. Female, aged 25, hydrosalpinx.

Hyoscine, gr. $\frac{1}{8}$, was given on two occasions during daytime. Did not sleep during day, and not as well as usual on succeeding night; weakness, etc.

45. Male, aged 63, wild delirium from acute nephritis.

Hyoscine, gr. $\frac{1}{100}$, was given at six different times.

Twice it was succeeded by a few hours' sleep. Four times it was without effect.

46. Male, aged 71, wild delirium, fracture neck of femur.

First night.—No sleep, although chloral, $\mathfrak{D}\text{ii}$, was given in two doses.

Second night.—Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, was followed by eight hours' interrupted sleep.

Third night.—Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$. Wild delirium all night.

Next morning at 11.30 hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$; fell asleep at twelve and awoke very delirious at one.

After this chloral-bromide-morphine mixture, in large doses, produced sleep whenever a hypnotic was required.

47. Female, aged 18, insomnia from excessive study.

Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, at 10.30. Fell asleep at twelve. "Frightened" sleep during remainder of night; awoke with severe headache, and declared emphatically that she "would take no more of that stuff."

48. Male, aged 14, healthy.

Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, at 2 P.M. He was carefully watched by one of the writers, but no effect whatever was noticed.

One month after, he received gr. $\mathfrak{x}\mathfrak{ss}$ at 1 P.M., and in five hours gr. \mathfrak{ss} . No effect.

49. Female, aged 35, dyspepsia.

Hyoscine, gr. \mathfrak{ss} , at 2 P.M. Severe headache and throat-dryness, with general malaise. Fell asleep at 10 P.M.

50. Female, aged 17.

Immediately after removal of tonsil received hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, at 2.30 P.M. In twenty minutes face became very red, and she felt very sleepy and miserable. At 10 P.M. fell asleep, but sleep was much disturbed throughout night.

51. Female, aged 22, third day puerperium.

Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, at 11 A.M. Severe headache, redness of face, "burning" feelings, throat-dryness, thirst. Fell asleep twice, but was awakened in a few minutes by terrible dreams. Sweated profusely, as the temperature of the room was 98°.

52. Male, aged 29, mild asthma, troublesome cough, whistling rales.

July 30, 9 A.M.—Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, every two hours. 7 P.M., has taken four doses; mouth and throat feel dry.

July 31, 9 A.M.—Slept but three-quarters of an hour last night, principally on account of dryness of throat. 7 P.M., slept about one and a half hours during day; slight frontal headache; pupils dilated; vision very indistinct.

August 1, 2 P.M.—The last dose was taken at 10 A.M., making gr. $\mathfrak{x}\mathfrak{ss}$ in forty-eight hours. Slept three and three-quarters hours last night, making six hours in all since he commenced taking hyoscine. Now has very severe headache and extreme muscular weakness, besides symptoms mentioned above. The hyoscine symptoms passed away in about thirty-six hours more.

Although he complained constantly of throat-dryness, yet, on repeated examination, the mouth and pharynx presented a natural appearance.

53. Male, aged 25, indigestion.

Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, at 2 P.M. Felt very drowsy, and went to bed, but could not sleep till 1 A.M. Headache, weakness, fever, redness of face, dilatation of pupils.

Hyoscine, gr. $\mathfrak{x}\mathfrak{ss}$, three days after, at 9 A.M. Staggering gait, but *no headache or dryness of throat*; anorexia. Symptoms had about disappeared by 4 P.M. (when he walked a mile), except dilatation of pupils, which was quite noticeable at the end of forty-eight hours. Fell into a sound sleep at 10 P.M.

54, 55, 56, and 57, adults, suffering from insomnia. Each received gr. $\mathfrak{x}\mathfrak{ss}$ at night, without effect. Refer also to Case 11.

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NOTE ON HYDROBROMATE OF HYOSCINE.

By P. S. ROOT, M.D., MONROE, MICH.

THUS far in the therapeutic literature of the uses of hyoscine I have seen mentioned no untoward effects from the use of this drug in ordinary doses (such as recommended by alienists), ranging from $\mathfrak{x}\mathfrak{ss}$ to \mathfrak{ss} of a grain, administered hypodermically.

The following case illustrates the fact that even smaller doses than those indicated may occasion dangerous symptoms:

Mrs. —, age 58, of full habit, the subject of "continued fever," had for a number of days suffered from persistent insomnia, not alleviated by ordinary remedies, temperature ranging from 101° to 103°; pulse, 116 to 120 and weak; further, the symptoms indicated marked functional derangement of the sympathetic nervous system. The insomnia proving intractable, and rest being a requisite, Dr. E. L. Shurly was called in consultation, and upon his recommendation, concurred in by myself, I administered $\mathfrak{x}\mathfrak{ss}$ of a grain of hyoscine *per os* at 11.30 A.M. At 12.30 P.M. I was hastily summoned, and found the following condition: Patient in deep stupor, from which she could not be roused; respiration extremely shallow and 50 per minute; pulse 96, full and strong; tongue and mouth dry; pupils widely dilated; countenance suffused and livid; convulsive movement of lower extremities, etc. Suitable stimulants were administered, the patient being only able to swallow after the fluids had reached the lower pharyngeal muscles; in fine, there was no power to swallow. This condition persisted for two hours, when she could be partially roused, after which she passed into a more tranquil slumber, sleeping for a number of hours, all effects of the drug passing off, but with mitigation of many of the nervous symptoms.

After this, on a partial recurrence of the symptoms, I administered $\mathfrak{x}\mathfrak{ss}$ of a grain, which was followed by the dreamful sleep characteristic of the drug. The above case

is mentioned that the profession may not be too incautious in the administration of this powerful alkaloid. I may say that investigations were made as to the possibility of mistake in dispensing, but none was found to exist; and that I administered the same dose, hypodermically, to a case of acute mania, but without even getting the characteristic effect of the drug. In conversation with my friend, Dr. Geo. P. Andrews, of Detroit, he narrated to me a case in his own practice where similar symptoms resulted from the administration of $\frac{1}{100}$ of a grain. Finally, that hyoscine is a hypnotic of undoubted value is undeniable, but the promiscuous administration of it is not to be recommended, save with the utmost caution. From my experience, I would say that the usual dose should not be greater than $\frac{1}{100}$ of a grain, save in cases of acute mania.

*THE USE OF AN ABDOMINAL BANDAGE
IN THE SECOND STAGE OF LABOR,
WITH A REPORT OF TEN
CASES.*

BY J. WESLEY WELKER, M.D., STROMSBURG, NEB.

UP to the commencement of the second stage of labor the uterus alone is concerned in dilating the neck, but it then seems to call in aid the contraction of the abdominal muscles, and consequently both the pain and the bearing down are carried to a much higher degree. The pains are stronger, yet nevertheless the woman assists them by voluntarily contracting the abdominal muscles; and as the pains grow stronger and labor seems to be tedious, then the woman will often call on her physician for help. I believe that this assistance can be rendered by the use of an abdominal bandage, and that by it, in the second stage of labor, we may not only lessen the suffering of our patient, but at the same time shorten the duration of labor. Consequently I use the abdominal bandage for a twofold purpose: First, to lessen the suffering of my patient. To accomplish this I apply it at or before the commencement of the second stage of labor, making it just tight enough to be comfortable to my patient. Second, to shorten the duration of labor. To accomplish this end I tighten the bandage when the abdominal muscles are called upon to assist the uterus in expelling its contents. In my first cases I used simply an ordinary linen towel, which I

put around the abdomen of the woman and secured with pins, which I unpinning and tightened as the case demanded. I now use a bandage which I constructed for that purpose, which resembles in shape the lower half of a corset, except I have it open on the side, making a back and abdominal piece, which I unite by means of straps and buckles. Having it open on both sides I can adjust it more easily to fit different-sized patients. The following cases illustrate some of my results:

CASE I.—Primipara, had been in labor for thirty-six hours, os rigid, and not dilated larger than a silver dollar, and membranes protruding. I applied the abdominal bandage and ruptured the membranes, and the child was delivered in about thirty minutes. The placenta came away in about fifteen minutes.

CASE II.—Primipara, had been in labor when I arrived about twelve hours, and the membranes had been ruptured for about two hours. I at once applied my abdominal bandage, and labor was completed in twenty minutes.

CASE III.—Multipara, mother of three children. In a violent pain, just as I entered the room, the membranes were ruptured. I at once applied my abdominal bandage, and labor was complete in fifteen minutes.

CASE IV.—Primipara, had been in labor about two hours when I arrived; membranes were ruptured. I applied my bandage, and labor was complete in twenty minutes.

CASE V.—Had been in labor for six hours; membranes ruptured about fifteen minutes before I arrived. I at once applied my bandage, and labor was completed in fifteen minutes.

CASE VI.—Primipara, had been in labor for ten hours, and membranes ruptured about two hours before I arrived. I at once applied my abdominal bandage, and labor was completed in eighteen minutes.

CASE VII.—Multipara, mother of six children, had been in labor about four hours; the membranes ruptured a few minutes before I arrived. I applied my abdominal bandage, and in eight minutes labor was completed. In her six other confinements the times from the rupturing of the membranes to the completion of labor were not less than six hours.

CASE VIII.—Primipara, had been in labor four hours when membranes ruptured. I applied my abdominal bandage, and labor was completed in twenty-eight minutes.

CASE IX.—Multipara, mother of four chil-

dren. I applied my abdominal bandage before the completion of the first stage of labor, in order to relieve an annoying pain in the small of the back. Therefore I did not make my bandage as tight as I do in the second stage of labor. In forty-five minutes the membranes ruptured, and I tightened the bandage, and labor was completed in ten minutes.

CASE X.—Primipara, had been in labor but one and a half hours when I applied my abdominal bandage. The membranes ruptured immediately after I applied the bandage, and labor was completed in twenty-five minutes.

Now, in conclusion, let me repeat the benefits that may be derived by the use of an abdominal bandage during labor. By applying it during the first stage of labor we do away with the restlessness so peculiar to the first stage. Last, but not least, we shorten the duration of the second stage of labor, and by so doing we deliver the woman before she has worn herself out by contracting the muscles of the chest to stimulate the abdominal muscles to help the uterus expel its contents.

ON LOBELIA INFLATA IN ASTHMA.

The employment of lobelia inflata against asthmatic disorders has of late become obsolete, owing to the alleged inertness of the drug in the mentioned affection. DR. NUNES writes to the *Bulletin Génér. de Thér.*, No. 4, 1886, that he feels convinced that the failure of lobelia in asthma is caused solely by using the drug in too small doses. Trousseau and Pidoux prescribed 2 to 25 drops of the tincture three to four times daily, Dujardin-Beaumetz 20 to 50 drops, Gubler 1 to 2 f3, and Torres Ilomen even 2½ f3 with very satisfactory results. No other clinician has ever employed the drug in so large a dose as Ilomen for fear of causing untoward symptoms or even poisoning. Nunes's practice of exhibiting the tincture of lobelia in doses of ½ to 1 f3, without having ever met with an accident, shows how little the above-mentioned fears are justified. In order to intensify the expectorant action of lobelia, Nunes combines it with benzoate of ammonia. His results were very encouraging. The following cases are alluded to in Nunes's communication :

A man of 56 years of age was suffering for a year from strong dyspnoea and coughing, interfering with his sleep. On auscultation whistling and bellows-sounds were heard.

Heart and blood-vessels were normal. Nunes prescribed

R Tinct. lobeliae, f3iv;
Ammon. benz., ʒiiss;
Aquæ dest., f3vii. M.

S.—A tablespoonful every two hours.

Later the quantity of lobelia was doubled; the patient recovered completely.

A man 24 years of age suffered for three years from dyspnoea and cough. The vascular system was normal, but the liver was enlarged. The latter condition was removed by giving the patient

R Calomel, gr. viii;
Pulv. rad. rhei,
Sacchar., ʒʒ gr. vii.

S.—Take before retiring.

Later the following was prescribed :

R Tinct. lobeliae, f3v;
Ammon. benz., ʒiiss;
Aquæ dest., f3vii. M.

S.—Tablespoonful every two hours.

After three days, cough and dyspnoea had decreased. Nunes then ordered :

R Terpene, gtt. 15;
Mixt. gumm., f3vii.

S.—Tablespoonful hourly.

As the condition of the patient grew worse, Nunes resorted to the dose of 1 f3 of lobelia in 7 f3 of water, as given to the first patient, whereupon the patient recovered.

In two other cases, Nunes obtained the same favorable results by equally large doses of the tincture of lobelia.

ON CERTAIN APPEARANCES IN THE URINE AFTER THE USE OF NAPHTHALINE.

In the *Arch. f. Experim. Pathol.*, vol. xxi., part i. p. 34, 1886, PROF. PENZOLDT publishes a peculiar reaction of naphthaline in the urine, which he describes as follows : Pour a small quantity of the urine, which is to be examined, into a test-tube, and add 1 c.c. of concentrated sulphuric acid. The urine swimming above assumes at once a green coloration, which is especially clear and beautiful at the line of contact of both liquids. Gradually the green color becomes turbid, and ultimately disappears. This reaction sets in invariably after the use of naphthaline, and probably refers to the formation of β -naphthachinon.

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Leading Articles.

CALOMEL IN THE TREATMENT OF CARDIAC DROPSY.

THE striking results of Jendrassik as to the diuretic action of calomel in the treatment of dropsy, especially of cardiac origin, have already received confirmation. In the *Wiener Med. Wochen.* (July 10, 1886) Prof. Stiller, of Buda-Pest, publishes the details of eighteen cases of dropsy of cardiac origin which he has treated both in hospital and in private practice by the administration of calomel after the directions given by Jendrassik. His results, although he but seldom obtained the immense increase of urinary secretion reported by Jendrassik, were in their general results quite equally favorable to his. Two cases he gives in full detail, and either alone would be sufficient to prove the truth of the statement that in calomel a drug has been found whose value seems in such cases almost inestimable. Cases with intense œdema of the extremities, peritoneal and pleural effusions, enlarged and congested liver with marked dyspnoea, he has succeeded in restoring almost to health, certainly to comfort, by the administration of calomel. He has seen œdema entirely disappear, ab-

dominal and pleural effusions and albuminuria removed, an enlarged liver return to its normal size with complete relief of respiratory distress. Such results have followed the administration of calomel alone after digitalis had failed to produce relief, and also in cases where the use of digitalis, on account of the unfavorable symptoms which so frequently interfere with its action, had compelled its suspension. Dr. Stiller thinks that he is perfectly warranted in confirming in all respects the statements of Jendrassik. He believes that in dropsy of cardiac origin small doses of calomel constitute the most efficient and rapid means of relief even in cases where digitalis fails, while no other drug can in any degree sufficiently approach it to be worthy of being brought into the same category. Its action is not only exerted on the removal of the œdema, but also on the effusion of serous cavities.

The diuresis, agreeing again with Jendrassik, he found to suddenly occur on the third or fourth day after the commencement of the administration of the drug, and it is advisable to suspend its use, to be renewed again in considerably decreased doses when the diuretic action appears to be disappearing. This action in the removal of effused liquid is only to be explained by some particular facilitation of absorption by the blood, since Stiller as well as Jendrassik found that calomel so administered was entirely without influence on the heart or kidneys. In his first few cases Dr. Stiller found that diarrhœa, and in one case stomatitis, complicated his results, but in his later experience he found that the administration of opium with the calomel entirely prevented the appearance of diarrhœa, while it did not interfere with its diuretic action. According to his experience, the most marked diuretic effects have been produced from calomel without the least sign of mercurialization.

In spite of these favorable reports, calomel cannot, however, be regarded as a substitute for digitalis, since it is in no respect a heart remedy. In the numerous cases where digitalis fails or is contraindicated, and where numerous substitutes for digitalis are either not applicable or have proved themselves unreliable, according to the above authors the value of calomel cannot be overestimated. Enough has already been determined by those two authors to prove that calomel in such diseases must in future occupy a very important place. As to the more exact indications as to its use, cases in which it is most favorable

and as to whether its employment exerts any influence on the further progress of the cardiac disease, these facts must, of course, be left to future investigations. It is to be hoped that in the treatment of heart-disease calomel will receive the investigation which it without doubt seems to deserve.

THE COMBINATIONS OF DRUGS.

ATTENTION is drawn in an address recently delivered by Prof. Goll before the Swiss Medical Association (*Correspondenzblatt für Schweiz. Aerzte*, No. 14, 1886) to a point in the practical administration of drugs which seems hardly to have attracted the attention which it merits. The days of bulky polypharmacy have passed, and we are now more and more striving for the isolation of active principles and the administration of drugs in concentrated, isolated forms, but yet a careful study of many of the old prescriptions can teach us many points of value. The value of many combinations of drugs is well known. Many have fallen out of use, and many new combinations may serve totally to modify the character of the individual ingredients, or, better yet, to prevent the unfavorable actions of certain drugs while accentuating the influence which it is desired that they exert. Dr. Goll calls attention to several of these which are well worthy of notice, even although many of them may be known, and although constantly employed.

First, as regards the use of opium. As is well known, opium is often added to numerous medicines to render them less irritating to the stomach or intestine, or to reduce or prevent some remote reflex action. Thus vomiting produced by irritant action on the stomach is often entirely prevented by the use of opium. Oppholzer and Hasse long ago called attention to the fact that the emetic action of antimony, while not hindered by the conjoint administration of opium, was freed from the painful retching and cramps of the abdominal muscles which almost invariably follow its administration alone. So again in the administration of drugs which are absorbed but with difficulty, the conjoint use of opium, by delaying the passage of the drug through the alimentary canal, assists in its more complete entrance into the circulation. Thus salivation or the constitutional action of mercury is more readily produced by the addition of a little opium to calomel or mercurial iodide. Finally,

the addition of opium to cough mixtures as a means of dulling the irritation from the bronchial tubes, reducing expectoration and relieving dyspnoea, is well known and every day employed.

Equally important are the various purposes served by the combination of belladonna and atropine with other remedies. Thus from the time of Trousseau atropine or belladonna has been combined with opium as a palliative against the night-sweats, cough, and dyspnoea of phthisis, while again it does not seem to be appreciated that the vomiting and nausea which in so many cases follow the subcutaneous use of morphine may be almost entirely, if not invariably, removed by the combination of one part of atropine with fifteen to ten of the morphine in the subcutaneous injection. Where morphine must be given continuously nausea and vomiting may be permanently removed by the combination of atropine in the first few injections which are given. The system seems then to tolerate the morphine, and the atropine may be omitted. So also in the removal or the prevention of nasal catarrh so constantly produced by the administration of iodide of potassium. Here the primary combination of the belladonna with the potassium iodide not only assists in the absorption and more rapid production of iodism than when the iodide of potassium is alone given, but will constantly prevent the production of the nasal complication. Against salivation Dr. Goll finds that belladonna is less active, but that there is no other drug which is equally efficacious in suppressing profuse perspiration.

One of the oldest uses of belladonna is in the relief of cardialgia and intestinal colic, where belladonna or hyoscyamus extract is to be preferred to opium or morphine. The combination of belladonna or hyoscyamus with colocynth, senna, and other drastic purges, will almost entirely prevent the griping and colic which so often renders the use of these drugs so disagreeable. An old form of administration of the extract of the hyoscyamus with colocynth and aloes, or the more modern American formula of the combination of extract of belladonna with three times its weight of podophyllin with soap, is worthy of the reputation which it at present enjoys. It is well known that by means of belladonna the intestinal muscular fibres are first excited and then partially paralyzed; hence belladonna is a valuable remedy for the relief of the spastic colic which accompanies lead-poisoning.

Another use of belladonna which does

not seem to have attracted sufficient attention is in its administration as a cardiac stimulant. The following statement of Luchsinger deserves to be widely known: "If the heart is brought to a stand-still, whether by chloroform or potassium salts, by gallic or oxalic acid salts, by apomorphine, quinine, zinc, or poisonous mushrooms, atropine will always succeed in the commencement of the paralysis in restoring the action of the heart." Again, the combination of morphine and atropine in the proportion of twenty to one will accentuate the action of cocaine; combined with chloral, belladonna reduces the paralyzing action of the former on the heart, while, according to Bert, Morat, Aubert, Doster, and Laborde, preliminary injections of atropine will greatly remove the danger of arrest of the heart in chloroform narcosis. Finally, the combination of belladonna with quinine or salicylic acid has deserved the greatest reputation in the treatment of neuralgia.

Still another use of the combination of drugs is called attention to by Dr. Goll, where the production of solubility plays the most important rôle. Mercury, as is well known, is with difficulty absorbed, and is corrosive in many solutions. The combination of mercury with albumen forms one of the most absorbable compounds. Such a solution is easily prepared by warming a solution of one of the haloid salts of mercury in the presence of a soluble albuminate. Many other additions might be made to this list of useful combination of drugs, but enough has already been said to call attention to the useful purpose which may often be served by the judicious combination of drugs, and to teach us that we must not entirely neglect the teaching of the older therapists.

THERAPEUTIC INNOVATIONS IN DIPHTHERIA.

THERE are professional men who regard the search for specific, or, in fact, for any other remedies against the infectious fevers, as absolutely futile, because none can, in their estimation, ever be found. Others again claim that a fever not only *cannot* be cured, but also *ought not* to be cured, for they declare (as did Prof. Winternitz) fever is merely a bridge for the diseased organism to the recuperation of its prior state of health, and the high temperature itself removes the etiological factors of the disease, viz., the micro-

organisms infesting the circulation. The question whether a fever can in reality be cured cannot engage our attention, as the rational school of medicine has never advanced any claims in this direction, and all of its remedial endeavors are directed solely against the sequelæ and complications of the febrile affection. The conviction of the impotency of our therapeutic resources against the infectious fevers ought, however, merely to enhance our appreciations of prophylactic measures without relaxing our efforts in the search for remedial means and ways.

In diphtheria especially it cannot be doubted that the results of treatment obtained at the present day surpass considerably those of the past, though this favorable showing is probably less to be credited to the exhibition of novel medicaments than to the more rational general treatment of the affection as the natural outcome of a better understanding of the nature and causes of infectious fevers. Still, there have been within the past year or two recorded certain therapeutic innovations in the treatment of diphtheria which, for their strikingly gratifying result, have attracted unusual attention. We beg to discuss here some of the novel procedures in the treatment of diphtheria.

Our readers will recall the simultaneous eulogy of the actual cautery in diphtheria by Dr. Bloebaum, of Koblenz, and an Italian physician, as published in the *THERAPEUTIC GAZETTE* in the first issues of this year. Bloebaum saved quite a number of grave cases of diphtheria by applying, in the initiatory phase of the affection, the Pacquelin cautery to the tonsils and fauces.* Prof. Henoch, of Berlin, also tried the cautery in an almost hopeless case of diphtheritic infection,† with the result of saving the patient. Henoch resorted to chloroform, which he declared as indispensable (a fact not mentioned by Bloebaum) for the accomplishment of a thorough cauterization. Of course it was understood that this treatment could only be successful in the beginning of the disease, when, as Francotte declares, diphtheria is a simple local affection.

Bloebaum has time and again exhibited the cauterization treatment in diphtheria, and met with success in every instance where success could possibly be anticipated.

In No. 37 of the *Deutsche Medicinal Zeitung*,

* *Schmidt's Jahrbucher*, vol. 209, p. 49.

† As reported by our special correspondent at Berlin, who was at the time asked to assist.

1886, Dr. Bloebaum publishes an accurate description and cuts of the apparatus requisite for the galvano-caustic treatment of diphtheria. At the same time he records another series of diphtheritic cases successfully treated by his plan. We abstract from this paper the *résumé* of the clinical history of a diphtheritic infection occurring in his own daughter, aged sixteen years.

The girl was taken sick in the evening of the 3d of April, under the usual premonitory symptoms of diphtheria. On the following morning the right tonsil presented a diphtheritic ulcer of a considerable size, which was immediately cauterized. In the evening the girl had no fever. On the following morning the patient presented four circumscribed deposits on the left tonsil, each of the size of a lentil. Again cauterization was performed, and still no evening fever appeared. The girl slept well, and was wholly restored on the succeeding day.

We pass to another mode of treatment, which, without any claims to a specific character, appears to have led to very gratifying results. Prof. Hofmohl, of Vienna, following the recommendation of Vogelsang, tried the peroxide of hydrogen in a number of diphtheritic cases, and advocates this therapeutic agent warmly in the *Wiener Med. Presse*, 1886, xxvii. 18, 19. Hofmohl prescribes the drug to be taken internally, as follows :

R Hydrog. peroxide (2 per cent.), 200 parts.
Glycer. pur., 3.0 parts.
S.—One teaspoonful every two hours.

At the same time the drug is to be exhibited as an inhalation. It is very probable that the beneficial effect derived from the use of the peroxide of hydrogen refer to its decomposition in the system, and the subsequent introduction of free oxygen into the blood.

Another plan of treatment recently proposed by Noeldechen, of Pforta, in the *Deutsche Medicinal Zeitung*, No. 33-36, 1886, is likewise worthy of attention. This author recommends a carefully-executed brushing of the tonsils or fauces with salicylic acid in substance. No doubt the antiparasitic virtues of salicylic acid exhibited when the diphtheritic infection is still local and circumscribed can be very advantageously utilized. At the same time Noeldechen insists upon gargles with chlorate of potassium, or the application of ice to the neck and head. Internally he prescribes at first calomel, later quinine.

Bloebaum's actual cautery and Noeldechen's salicylic acid are obviously exhibited for one and the same reason,—*i.e.*, the sterilization of the soil whence the infection pervades the blood.

It must be left to the future to decide whether these therapeutic innovations, which, as far as can be judged from isolated trials, appear actually to possess certain advantages, will ever become popular with the majority of practitioners.

ANDERJOA, A SO-CALLED SPECIFIC FOR DYSENTERY.

FOR many years in the island of Mauritius a remedy has been known under the name of "*mauvais*" which has enjoyed the reputation of being a specific for dysentery. Dr. Clarenc has recently found that the active ingredient of this remedy is the anderjoa or anderjou plant, a native of that island, and he publishes in a letter in the *Bull. de la Soc. Méd. de L'Isle Maurice* the manner in which this remedy is prepared. One pound of the dried anderjoa plant is reduced to a fine powder, and twenty tablespoonfuls of this powder are mixed with a tablespoonful of anderjoa powder, previously roasted, together with a tablespoonful of arrow-root, and the whole divided into ten equal parts ; each one of these is taken daily in an infusion. The anderjoa is the seed of a member of a group of apocinaceæ of the species *Hollarrhena*, and is known as the *hollarrhena antidysenterica* described by Waring in the Pharmacopœia of India in 1868, p. 137. Its bark has been previously imported into Europe, and is known under the names *cadoga pala*, or pala or telli-cherry bark. Its seeds have from time immemorial been regarded as tonic, antifebrile, and above all antidysenteric. Unfortunately, however, this plant has often been confounded with other species, and as a consequence it has fallen into discredit. According to Drs. Lesur and Anteleme, the *mauvais*, or as it is also known, the *lagravelle*, remedy has the following formula :

Anderjoa powder, 10 parts ;
Arrow-root powder, 5 parts ;
Magnesia, $\frac{1}{8}$ part ;
Benzoin, $1\frac{1}{2}$ parts. M.

Boil for two or three minutes in five hundred parts of distilled water, filter through linen, and cool.

S.—Dose, two or three wineglassfuls of this infusion taken on an empty stomach one or two hours before meals, while the whole is to be taken in twenty-four hours.

On the third day of treatment benzoin is to be replaced by powdered red cinchona bark, and on the sixth day anderjoa powder is to be roasted before being powdered, and may be also mixed with a little alum.

According to the observations of Dr. Lesur, this remedy is especially useful in chronic dysentery, especially when the discharges have become purulent. It should not, according to this author, be administered until the use of ipecac., calomel, and opium have failed to prevent the transition of the acute into the chronic stages of dysentery. Dr. Clarenc also adds a number of cases which seem to demonstrate the efficacy of this medicament in the chronic forms of dysentery. As it seems to be already an export, it is to be hoped that it will be subjected to further study and its exact value determined.

PILLIGANINE A POISONOUS ALKALOID OF BRAZILIAN LYCOPODION.

PILLIGANINE is the active principle of pilligan, a variety of lycopodium common in Brazil and known under the name of lycopodium saurus. It has been prepared by M. Adrian (*Comptes Rendus*) in the following manner: The powder of the pilligan is treated by boiling water and evaporated to a soft extract, which is dissolved in alcohol. This alcoholic solution is then decolorized by the subacetate of lead, of which the excess is precipitated by the addition of milk of lime. It is filtered and neutralized by tartaric acid, filtered a second time, the alcohol distilled off, and the residue dissolved in water. It is finally filtered again, rendered alkaline by the carbonate of sodium, and shaken with chloroform. After evaporation the chloroform solution deposits a yellow precipitate, which is purified by a renewed treatment with the carbonate of sodium and chloroform. According to Houdé (*Répertoire de Pharm.*, July, 1886), pilliganine in the freshly-precipitated condition has a vinous odor, possesses an alcoholic reaction, and if a rod which has been dipped in hydrochloric acid is approached to it, it disengages whitish fumes. It is soluble in alcohol and water and chloroform, and slightly soluble in ether. It gives with sodium phosphomolybdate a yellowish-white precipitate; a pale brownish with potassium iodide; a white precipitate with tannin, and a very copious white clotty precipitate with potassium mercury iodide; with picric acid, after some time, a yellowish

crystalline precipitate; with mercuric chloride and platinum chloride no reaction. A few experiments have been made with this alkaloid on animals by Dr. Bardet, which have simply served to prove that it is a powerful poison with a marked emeto-cathartic action. According to the *Lancet* (July 24, 1886), M. Laborde recently presented to the Paris Biological Society a note from M. Bardet on the action of pilliganine, one of the alkaloids of the pilligan. It is stated to be a convulsive poison with a strong emeto-cathartic action. M. Brown-Séquard remarked that it must therefore be an exception to the rule, for all known convulsive poisons were devoid of action on the digestive canal. M. Grimaux explained that the convulsive effects had been obtained from the alkaloid, while the gastrointestinal effects had been produced by an infusion of the pilligan, so that it was not clear that the infusion contained the alkaloid; indeed, it might have contained some other alkaloid belonging to the same plant. As far as we can learn no further investigations have been made with this drug, which from its energy certainly is worthy of study.

Reports on Therapeutic Progress.

THE TREATMENT OF THORACIC ANEURISM BY A NOVEL METHOD.

MR. RICHARD BARWELL reports in the *Lancet* for June 5, 1886, a case of a man 39 years of age, with a syphilitic history and early intemperance, in whom there was an aortic aneurism springing from the lower or concave part of the arch, and progressing above, forwards, and backwards. In this case ligation of the vessels was evidently out of the question, and he was treated by rest and restricted diet, together with iodide of potassium, for a few weeks, and with small doses of aconite and salicylate of atropine. At first the tumor diminished in size, and then began a period of exacerbation, the cough became worse, and the tumor increased both within and without the thorax. The patient was now in a very critical state, although the lungs emitted very little air, in places none at all, the cough was very painful and constant, and expectoration purulent. In considering the cause of failure of the various surgical operations employed in the treatment of thoracic aneurism, it occurred to Mr. Barwell that if the area of galvanic action in electrolysis could be increased or the clots on foreign

bodies rendered harder and more stable, a successful result might be hoped for. This result Mr. Barwell thought might be effected by introducing into the aneurismal sac a steel wire arranged to lie in wide coils, then by passing along it a carefully-regulated galvanic current. In this way both the preceding methods might be combined, and a somewhat similar procedure was employed in his case. In the mechanical arrangement, however, there was a little difficulty. An ordinary trochar and canula, such as have been hitherto used for passing wire into sacs, was evidently unfitting on account of its conducting power. A tubular needle of vulcanite, with a steel tip and several other devices, were procured and rejected. At last a tube of ivory, sharpened like a hypodermic needle, was accepted as the most feasible arrangement. On March 2, the skin being rendered insensitive by the injection of cocaine, a fold was pinched up, and a little incision made from within outwards over the tumor; the ivory needle was then thrust in without difficulty, and about ten feet of the finest steel wire passed into the sac. The wire, having been first wound on a wooden cylinder half an inch in diameter and being of the best steel, must, after being paid through the needle, coil itself up again in the sac. Dr. Murray undertook the management of the galvanic arrangements, and he gives the following short account: "The wire was connected with the positive pole of an eight-celled Grenet's battery. The negative was applied to the upper dorsal region a little to the left of the middle line. Between the electrode and the skin was interposed a piece of amadou about a foot square, thoroughly saturated with hot water. A galvanoscope and a voltmeter (Gaiffe's) were included in the circuit. The resistance in the voltmeter was so great that the strength of the current did not exceed four millampères. Twenty cells of a Coxeter's 'practitioner's voltaic battery' were therefore added to the Grenet battery, and the current strength was raised to about nine or ten millampères. At this level it was maintained during the operation. The current was passed for an hour and ten minutes. Some redness of the skin was caused by the negative pole, but no indication of irritation at the place of puncture." For twelve hours signs of consolidation were absent, or nearly so; but at the end of that period the pulsation seemed considerably more distant and the tumor much harder, and this change rapidly increased. The lungs began to unload themselves of their accumulated pus and

mucopus; expectoration, very difficult previously, became easy and somewhat copious, showing decrease of pressure on the bronchi. But on March 5 (fourth day of operation) a new tumor appeared to the right of the sternum, and rapidly increased. The man also became weaker. He died on March 9, a week after the attempt, partly from exhaustion, and partly, as it appeared, from rupture of this second sac.

At the post-mortem it was found that the interior of the bronchi were of a deep purple color; in places the mucous membrane was nearly or entirely absent; the substance of both lungs airless and tough, sinking in water, but not from inflammatory consolidation. The very large aneurism occupied the concave aspect and lower part of the front of the first and second part of the aorta; it had eroded a portion of the sternum and the ribs; the anterior portions of the almost solid lungs, more especially of the right lung, seemed to form part of the sac. On opening the aneurism, it was found to consist of two parts,—a left portion, much the larger, and a secondary or right portion, which seemed to have recently increased in size, and which, where the lung formed a part of the wall, had burst, and given exit to two pounds and eight ounces of blood, which was found in the right pleura. The left portion contained large wide coils of steel wire, each of which was surrounded by a pretty thick coat of firm colorless fibrin, strongly adherent to it at many places,—that is to say, wherever the metal was in contact, or within a moderate distance of the wall, the wire was bound to the sac by this fibrin, thus greatly increasing its strength and resisting power.

Mr. Barwell points out that his attempt was evidently too late; the man's lungs were already all but useless. The conformation of the aneurism also was unfortunate, in that it possessed a secondary sac, into which the wire could not pass. Not a new one developed after the operation, for the man stated in writing three days before his death that the tumor to the right of the sternum had existed two years previously. The endeavor to save life was by these circumstances frustrated. But consider what the condition of things found in the large sac means. Evidently it means that by passing a galvanic current not merely along two or three needles, which are afterwards removed, but along some feet of wire, which is left *in situ*, we have a device by which a considerable quantity of hard, firm, and persistent clot can be produced in

large quantities, even though, as in this case, the aneurism may be close to the heart. Mr. Barwell believes that if a galvanic current and coils of wire are to be of service in such cases, they will only be so when used in combination, after the manner thus illustrated.

THE INFECTIOUS CAPACITY OF CHRONIC GONORRHOEA.

NEISSER, the discoverer of the gonococci, addressed the meeting of German physicians at Strassburg on the interesting subject of the infectiousness of chronic gonorrhœa (*Centralblatt für Klinische Medizin*, April 3, 1886). He believes that the question whether chronic gonorrhœa is infectious or not cannot be answered summarily, but can solely be decided from case to case by repeated examinations of the gonorrhœal secretion for gonococci. Examining one hundred and forty-three cases of chronic gonorrhœa for gonococci, he found the proportion of cases giving a positive result to be almost equal to that giving a negative result.

Neisser recommends as the most effective treatment nitrate of silver in a proportion of 1 to 3000-2000, or a five per cent. solution of salicylate of sodium, the remedy being best injected with a soft thin catheter, having at its point several openings. In a case presenting even on repeated examinations no gonococci at all, treatment is better wholly avoided. The internal administration of the balsam of copaiba appears to be a useful measure.

This recalls a statement of two French observers, Sinety and Hennegue (vide *Progrès Médic.*, 1885, No. 33), which is in opposition to Neisser's claim. In their experience injections of nitrate of silver were unable to kill the gonococci found in the urethritis of females. The same negative results they obtained also with permanganate of potassium, ozone-water, and even with corrosive sublimate.

THE SURGICAL TREATMENT OF SUBINVOLUTION.

At a recent meeting of the alumni association of the Woman's Hospital in the city of New York, DR. A. PALMER DUDLEY read a paper with the above title (*Amer. Journ. Obstetrics*, July, 1886).

Dr. Dudley said that this condition was not particularly noticed by gynecologists, and that there was especially a paucity of histological evidence as to the nature of the condition. Retzius, of Sweden, had called atten-

tion to this twenty years ago. The reader then gave a history of the physiological processes leading to an increase of uterine tissue and to involution and subinvolution.

The terms areolar hyperplasia, chronic metritis, and subinvolution were often misapplied. Most writers gave more attention to chronic metritis (which was a misnomer) than to subinvolution. He had sought to discover the histological conditions present in this affection and would give the views of various authors. Dr. W. H. Welch, in a personal letter to him, had stated that he could find no evidence of any true inflammatory process in subinvolution. Cohnheim had reached practically the same conclusion.

The usual treatment of subinvolution by local remedies, iodine, phenol, douches, etc., even when faithfully carried out, relieved the patient only for a time; the uterus again increasing in size and the symptoms returning when the treatment was suspended. The reader believed that Emmet's operation for lacerated cervix was the best means of curing subinvolution, even when there was no laceration. He then gave in detail the histories of twelve cases of subinvolution, all of which suffered from pelvic distress and dragging, supra-pubic pain, backache, leucorrhœa, etc., the uterus being tender on pressure. Seven of these cases had laceration of the cervix; in six there was no laceration; ten suffered from dysmenorrhœa; eight from constipation and dysuria. Treatment by means of hot douches, iodine, glycerin-tampons, the tapping of cysts, curetting, etc., was faithfully carried out, and the patients were relieved, but were not cured.

After this hysterio-trachelorrhaphy was done where the cervix was lacerated; in the other cases a slender wedge was removed from the cervix, the apex of the wedge being carried deep enough to divide the circular artery. The depth of the uterine cavity was in all cases carefully measured when the patients began treatment, before the operation was done, and again some time afterwards. Of these twelve cases, there was in all a marked diminution in the length of the uterine cavity and improvement in the symptoms; in three cases, where there was displacement, the uterus returned spontaneously to its normal position; a thirteenth case, in which the wedge-shaped mass was excised, was complicated by the presence of a large fibroid; here, after ninety days of ordinary treatment, the uterus measured three and three-quarter inches (a diminution of one-quarter inch by treatment);

fifty-four days after the operation the uterus measured two and five-eighths inches, and there was marked relief from symptoms and diminution in the size of the fibroid.

*ARTERIAL PRESSURE IN BRAIN AND
FOREARM AS INFLUENCED BY
VARIOUS DRUGS.*

CAPELLI and BRUGIA, of Milan, have made some very interesting experiments on the blood-pressure as altered by various drugs. We condense their principal conclusions arrived at from *Schmidt's Jahrbücher*, June 22, 1886:

1. Inhalations of nitrite of amyl cause a fall in the pressure, first in the brain and then in the forearm. Besides, there are, however, some variations of pressure in both regions, which are not isochronic.

2. Morphine applied hypodermically in small doses produces at first a vascular contraction, and then a dilatation, most pronounced during sleep. The latter condition leads to an increase in volume of both the brain and the forearm.

3. Chloral causes at first cerebral anæmia on account of the decreased resistancy of the peripheral arteries; later there appears a vascular paresis, with a subsequent increase in volume of the brain.

4. Paraldehyde does not always produce hypnotic effects. Soon after application of the drug the cardiac power increases, and reaches its maximum during the deepest hypnosis. If no sleep result, this action upon the heart is less pronounced.

5. Hyoscyamine at first acts as an excitant; later the frequency of the pulse increases, while its pressure falls, until ultimately the normal state of both frequency and pressure are regained.

In a cold bath the peripheral arteries contract, the volume of the brain augments, and the pulse is first quickened and later slowed.

In a warm bath the experimenters found, contrary to the usually assumed venous stagnation of blood in the brain and a diminished vascular tension, during the entire bath a certain degree of vascular contraction and cerebral anæmia, with peripheral vascular congestion.

*A CASE OF IDIOSYNCRASY WITH REGARD
TO TANNIC ACID.*

DR. J. M. WILLIAMSON reports in the *Practitioner* for July, 1886, a case of a married woman, aged 57, who had been suffering from

anæmia from hemorrhoidal bleeding, which after operation left her the subject of distressing irritability of the bladder. Previously this trouble had always yielded to a mixture containing bicarbonate of potassium and tincture of henbane and an infusion of buchu; but this medicine failing to produce any effect, Dr. Williamson administered a mixture of sulphate of atropine, the anissated solution of ammonia (German Pharmacopœia), and the infusion of uva ursi. This seemed to produce symptoms of an asthmatic paroxysm, accompanied by a short, violent, suffocative cough, and with decided mental confusion, although vomiting and nausea were absent. Dr. Williamson concluded that this peculiar effect, the responsibility of atropine having been excluded, was attributable to the tannin which is so abundant in uva ursi. The symptoms passed completely and permanently away between two and three hours. This view as to the production of these peculiar symptoms was confirmed by Dr. Williamson's previous experience in the same case, where the administration of a rectal injection of 30 grains of tannic acid in alcohol and water for bleeding from hemorrhoids produced similar symptoms to those above alluded to, although very much more severe.

So also a number of other instances. One especially where, after emptying a box containing tannic acid, she had blown into it, inhaling a portion of the tannic acid; similar symptoms were produced. It seems therefore that there existed in this patient an idiosyncrasy with regard to tannic acid. Tannin injected into the rectum, tannin accidentally inhaled, the taking into the stomach the infusion of uva ursi leaves, all were followed by identically the same symptoms, while the curious fact is also noted that the application to the skin of an ointment of galls and the administration of gallic acid internally produced no disturbance.

These points are well worthy of recollection.

ACTION OF SCOPOLEINE.

PIERD'HOUV, desiring to directly compare the action of scopolamine with that of atropine, applied, as stated in *Nouveaux Remèdes*, 1886, No. 3, p. 61, in four healthy persons, atropine to the right eyes and scopolamine to the left eyes. Both alkaloids were furnished by Merck, and were employed in an equal solution (1 to 40). In the action of both remedies the observer noted a periodical simul-

taneous increase and decrease. Somewhat sooner than in the atropine eye, about eight minutes after application, the scopolamine eye presented an increase in the vertical diameter of the pupil, which, after a quarter of an hour, was followed by a return to the normal state. In scopolamine the maximum of mydriasis and paresis was reached in forty-five minutes, in atropine in sixty minutes. Twelve hours later, the pupils of the eyes treated with scopolamine became again dilated, remaining thus for three days. This return of physiological action after so great an interval is characteristic of scopolamine, and has never been observed in the case of atropine. Led by these researches, Pierd'hoy applied scopolamine in a case of chronic iritis, and obtained the desired effect without the eczematous after-effects following the atropine application, and which can only be avoided by applying cocaine simultaneously with atropine.

Pierd'hoy pronounces the mydriatic power of scopolamine as far superior to that of atropine, and advocates the employment of the former alkaloid in ophthalmological practice.

NEW METHOD FOR RELIEF OF RUPTURED PERINEUM.

At a recent meeting of the Medico-Chirurgical Society of Montreal (*Canada Medical Record*, June, 1886), DR. TRENHOLME read a paper on this subject, exhibiting drawings of the new method, as follows: This disease must be as old as parturition itself, and yet, beyond the adjustment of the parts, binding the knees together, in recent cases no really successful advance had been made for its cure till the late ever-lamented Dr. Sims introduced his silver suture. The operations of Baker & Brown and others were not of any real value, and perhaps the cause or nature of failure was not fully brought out till Emmet's paper upon this subject was given to the world. How much progress has been made can hardly be conceived of by those who have graduated during the last twenty-five years. Yet one of the best surgeons may endeavor to dissuade a confrère from attempting the operation, stating that "it is sure to be a failure." It is a recognized factor in the causation of subinvolution of the vagina and uterus, and its results are not limited to these organs, but that the tubes and varied ligaments share in the same mischief. It is a fruitful cause of retrolaxations of the uterus and prolapsus of bladder. Of all the marital misery and per-

sonal distress need be said nothing: these, of course, vary with the peculiarities of individual cases and the extent of the disease. There is one remark Mr. Trenholme makes as to what is known as the perineal body. Some writers have made light of its existence, because its anatomy and relations are not sufficiently definite to merit, as they think, this appellation. That every uninjured perineum has such a body is unquestionable, and the restoration of this body is *the one* object of perineorrhaphy. An operation is successful or unsuccessful, according as to whether this end of the operation is or is not attained—without it the natural support of the pelvic viscera is impossible. Not only is there apt to be hernia of the anterior rectal wall, but prolapsus of both bladder and uterus. The best success heretofore has followed Emmet's operation. His conception of the trefoil character of the surfaces to be brought together are based upon a right conception of the anatomy of the parts. The perineal body being the central, and the lateral surfaces the outside leaves of the trefoil, each sulcus represents the lateral borders of the vagina and rectum. Perfect union of these surfaces leaves but little more to be desired. In the first place, the loss of any tissue is to be avoided, and sure union by first intention the desideratum to be attained. Mr. Trenholme's operation is based upon the recognition of the immense value of the perineal body. He describes it as follows: "I denude the surfaces to the fullest extent of the parts injured. This denudation is accomplished by the removal of the covering of the parts to be denuded,—i.e., the cicatricial surface in *one* piece. For this purpose the first incision is made at the upper part where the edge of the skin coalesces with the cicatricial surface; the knife is entered at the highest point on the right side, and the incision brought down to the lowest part of the fourchette, when it is met by a similar incision on the left side. The lowest part of the angle is then seized with the forceps and carefully dissected upward, taking special care to remove the whole surface without incising the flap; this dissection is carried on till the surface represented by the original wound is uncovered. The next step is the introduction of the shield-sutures (and here I would say a word in favor of the catgut suture which I adopt). It is by far the best, as it gives the greatest possible extent of surface to surface,—much greater than can be secured by the interrupted or any other suture. Two deep sutures usually suffice, and these—whether

silver, silk, or catgut—are passed in and secured by clamp shot upon an ivory shield. The first suture should be inserted low down, and about three-quarters of an inch from the edge of the wound. It must be passed under the denuded surface so as not to appear, and brought out on the opposite side at a point corresponding to that of insertion. The second deep suture is similarly introduced higher up. The last deep suture should catch the flap, and the interrupted suture will do for this. The edges of the wound are coapted by horse-hair sutures, and the upper part of the flap and around on the right and left side are secured by catgut sutures; this leaves the united surfaces in the shape of the letter T. The vaginal surface is perfectly covered, and in no way can a drop of fluid enter the wound or interfere with union by first intention. There is very little pain, inasmuch as the deep shield-sutures allow of distention. Interrupted sutures should not be used. Where the rupture extends into the rectum, the flaps are carefully brought together by a running catgut suture, and the operation completed as in this case. The objection to all other operations was that it left the vaginal incision open, which, sometimes, therefore, interfered with union by first intention. By my method this is now impossible, and when catgut is used the results of the operation leave absolutely nothing more to be desired. The following points are gained: Perfect union, perfect restoration of the perineum, no loss of substance, and no after-fever worthy of the name."

NOTE ON THE PHYSIOLOGICAL ACTION OF TANGINA.

QUINQUAUD, reviewing the action of tangina, the drug used by the inhabitants of Madagascar for ordeals, attributes its principal effects to its influence upon the central nervous system (*Centralblatt für die Medicinischen Wissenschaften*, April 24, 1886). Applied to frogs the drug suspends the voluntary motions, heightens the reflex excitability, and causes clonic and tonic convulsions. Later, symptoms of paralysis set in, though the excitability of the muscular apparatus and of the peripheral motor nerves remains intact. Ultimately, however, the peripheral nerves appear as if affected by a curare-poison. In dogs the convulsions are preceded by vomiting, diarrhoea, and tenesmus. The working power of the muscles remains normal until death ensues. Respiration is first quickened, later slowed; the frequency of the pulse is

transiently heightened, then lowered; the blood-pressure is at first raised, and later depressed through cardiac weakness. The poison is thus seen to affect simultaneously circulation and respiration, the cardiac action outlasting respiration. Death ensues through respiratory failure.

Quinquaud administered an extract of tangina in doses of 1 to 1½ grains in various affections, and arrived at the conclusion that the drug could be utilized in paralytic affections of a toxic nature and in tremor and atony of the intestines. In two cases of urinary incontinence the drug led to a distinct improvement. If headache, nausea, vomiting, or a sensation of weakness sets in, the drug is to be suspended.

THE TREATMENT OF ORCHITIS AND EPIDIDYMITIS.

There is such a diversity of opinion as to the best treatment of orchitis and epididymitis the result of acute gonorrhoea, that the results obtained by MR. FREDERICK W. LOWNDES (*Lancet*, July 24, 1886) for the last eleven years in the Liverpool Lock Hospital are of considerable importance. The plan practised in this hospital is almost invariably that introduced by Mr. Furneaux Jordan in 1869, namely, by painting the affected testicle with a strong solution of nitrate of silver (two drachms to the ounce), at the same time enforcing strict rest in bed, and supporting the inflamed organ upon a small pillow so as to prevent it hanging down. Mr. Lowndes has invariably employed the same treatment, and in eleven years has treated two hundred and sixty-nine cases. He has always found his plan highly successful. The acute pain often amounting to agony is soon subdued, and in the majority of cases the organ returns to its normal size in the course of a few days. Sometimes a second painting is necessary, but this then suffices. The same plan of treatment has also been used by him successfully in private practice. When the patient cannot be induced to take absolute rest in bed, and when the patients are compelled to follow their usual occupations, the recovery must obviously be slower, as it is not possible by suspensory bandages or by means of handkerchiefs, however skilfully applied, to insure such perfect rest as when the patient is lying in bed. While the rest is an important item in the treatment, it is not by itself sufficient to effect a cure. The immediate effects of the nitrate of silver in allaying the pain are most marked, though for obvious

reasons the nitrate must act more powerfully while the organ is in a state of quiescence than when constantly active.

ON THE ANÆSTHETIC ACTION OF SUBCUTANEOUS INJECTIONS OF COCAINE.

WÖLFLE has made some very interesting experiments with the view to ascertain the anæsthetic effects of hypodermic applications of cocaine (*vide Heitler's Centralblatt*, April, 1886, p. 172). He found that an injection of about $\frac{1}{2}$ drachm of a five per cent. solution of cocaine produces within two to three minutes an anæsthetic condition lasting for twenty to twenty-five minutes. The region of complete anæsthesia had a diameter of two to three centimetres, while the adjacent skin was in a state of semi-anæsthesia for a distance of two to three centimetres. Further injections widened the sphere of anæsthesia. Needles introduced into the skin to a depth of three centimetres were not felt.

Wölfler employed these injections practically for the extirpation of small tumors, removal of foreign bodies, opening of abscesses, and similar minor operations. In larger incisions the injections are best made at both termini of the incision. Wölfler obtained excellent results with cocaine injections in neuralgias, especially of a strictly localized nature. Though not meeting himself with any accident in the employment of cocaine, Wölfler advises nevertheless to be cautious in its use, as Heyman had recently observed a severe intoxication after its application. (Cocaine had been applied by the brush to the larynx of a boy 10 years of age previous to the removal of papillomata, whereupon a state of apathy set in which lasted for five hours.)

THE ALLEGED POISONOUS PROPERTIES OF THE COMMON PARSNIP.

Two of the contributions from the department of pharmacy in the University of Wisconsin are devoted to the subject of the alleged poisonous properties of the root of the common parsnip (*Pastinaca sativa*), when growing wild. It appears to be a popular belief in some parts of the United States that if the edible roots of the cultivated parsnip remain three years in the ground they revert to the wild form, and then possess poisonous properties. MR. J. T. BENNETT failed, however, to separate from wild roots any principle that produced poisonous symptoms when ad-

ministered to the lower animals, and MR. WELLS gives direct testimony that he has eaten, both cooked and raw, roots from a parsnip patch that has been allowed to run wild for probably half a century. It is concluded, therefore, that the frequently-reported cases of poisoning by wild parsnip root ought to be attributed to one or other of the umbelliferous roots resembling it which are known to possess poisonous properties.—*Pharm. Journ.*, July 31, 1886.

ON ANÆSTHESIA PRODUCED BY COCAINE THROUGH INTERVENTION OF ELECTRICITY.

We are indebted to our Viennese contemporaries, the *Wiener Med. Blätter* (No. 6, 1886) and the *Centralbl. f. Therapie* (No. 4, 1886) for the description of Wagner's interesting method, which we have already shortly alluded to in a previous issue, of producing anæsthesia of the skin by the combined action of cocaine and electricity. Wagner utilizes the so-called cataphoric property of the galvanic current, which enables him to render the skin anæsthetic over any wanted area, provided the epidermis is intact. The cataphoric action of the galvanic current depends upon its power to direct liquids contained in a porous receptacle from the anode to the kathode. The living tissue represents such a porous receptacle, and is well adapted to execute this cataphoric action of the current. The quantity of liquid moved in a certain unit of time is the greater the stronger the current and the poorer the conducting quality of the liquid is.

The application of this peculiar action of the galvanic current for the introduction of medicinal agents into the organism has been previously attempted by other experimenters without having furnished very encouraging results. This failure Wagner attributes to the choice of the employed drugs, which probably did not fulfil the requisite of being active in very small quantities without demanding a strict fixation of the dose. Cocaine answers fully to this requisite. Wagner's *modus operandi* for the production of anæsthesia consists in applying a flat electrode invested with leather or flannel and saturated with a solution of cocaine to the skin; this electrode is made the anode of a galvanic current of a medium strength. After a few minutes the electrode is removed, when the entire surface of the skin which was covered by the electrode will be found to be completely anæsthetic. The degree of anæsthesia is propor-

tional to the strength and the duration of the current; its duration is from ten to fifteen minutes.

The larger the area to be anæsthetized the greater must be the strength of the current. Wagner uses a circular anode-electrode of two and a half centimetres and a five per cent. solution of cocaine with a current of six milliampères for four to five minutes. For the head and neck especially this strength suffices, while for the trunk and extremities currents of ten to fifteen milliampères should be employed.

If a deep anæsthesia is intended Wagner recommends to place the kathode diametrically opposite to the anode.

The quality of the cocaine solution influences the cataphoric effects only inasmuch as these are the greater the poorer the conducting quality of the solution is. A stronger solution is a better conductor than a weaker one, and therefore less eligible than the latter. On the other hand its higher degree of concentration warrants effects not anticipated from the use of a weaker solution. It has not yet been ascertained whether or not the stated advantage and disadvantage equalize each other.

Wagner's practical experience with the procedure is limited though encouraging. Thus in a small operation he became convinced that incisions could be made through the entire thickness of the cutis without occasioning any pain. If the anæsthesia does not penetrate deeply enough, the deeper parts of the wounds can, as suggested by Wagner, be rendered anæsthetic by applying the cocaine solution directly to them.

In the conclusion of his paper, as appearing in the above-quoted journals, Wagner refers to Corning's observation, viz., that the effect and duration of a cocaine injection can be increased if the Esmarch bandage is applied a little while after the injection. Applying the cocaine by aid of electricity, Wagner confirmed Corning's observation, and found that the anæsthesia could be extended over one-half by the use of the Esmarch bandage.

BROMIDE OF POTASSIUM AND LOTIONS OF ETHER FOR SUNSTROKE.

DR. C. H. HUGHES publishes in the *Weekly Med. Review* (St. Louis, July 17, 1886) a note in which he calls attention to the great value of bromide of potassium in this affection, by the mouth when it will be so taken, or by the rectum when the patient cannot be induced to

swallow it. According to Dr. Hughes, it bring about more speedily in the gravest cases the mental recovery of the patient, and averts the serious brain sequellæ, immediate or remote, of this always serious affection. Dr. Hughes claims that the acute insanity of sunstroke much sooner subsides under its use than from the cold treatment alone, and that the cold treatment ought always to be suspended as soon as the patient comes to himself and appears drowsy and feels chilly. His plan is to give from sixty to one hundred and twenty grains during the first hour, and sixty grains every hour or thirty grains every half hour, largely diluted in peppermint water; sulphuric ether freely to head and spine and fanned away till six ounces are used; ice at the same time to arms, wrists, abdomen, over the heart, legs, etc., and, in extreme cases of comatose collapse, ice-cold water into the bowels with ginger and capsicum, but ordinarily moderately cold water with two hundred grains of bromide of potassium.

He reports that a recent violent case with maniacal delirium, fear of being murdered, and requiring six men to hold him down, was subdued, as all his previous cases have been, by the free use of bromide of potassium, ice, and ether, passing into a tranquil sleep with soft and regular pulse and respiration within three hours after the beginning of the attack.

The man was a laborer, struck while at work in the street. He had drunk some that morning and more the night before, but was not intoxicated. He was thirty years old, and married.

The patient took altogether two hundred and forty grains during the first twenty-four hours, and will take two hundred and forty more, at the rate of ninety grains a day, before treatment is discontinued.

He was allowed some ginger ale when he began to complain of being cold, and ice removed and dry clothes put on him.

The remote consequences of sunstroke are very serious in various chronic forms of head trouble, especially in insanity, and few persons who have once had a sunstroke can ever after well tolerate heat. The chief and greatest value of the bromide of potassium treatment, at the time of the attack, is in averting these consequences.

Of course, atropine and iodide of potassium are not to be disparaged, and may be blended with the bromide treatment. And muriate of ammonia and aromatic spirits of ammonia may immediately follow it.

ON THE POISONS EXISTING NORMALLY
IN THE ORGANISM AND THE TOXIC
NATURE OF THE URINE IN
ESPECIAL.

The GAZETTE has already reviewed the very interesting investigations of several French observers, especially of Gautier, concerning the ptomaines, and we feel convinced that also the present discussion of the subject, abstracted from BOUCHARD's paper, as appearing in the *Gas. Hebd.*, vol. xxxiii., Nos. 13, 14, pp. 205-221, 1886, will be read with interest. Among the chemical constituents of the animal organism there are some which possess distinctly toxic properties. Man, under normal conditions, avoids intoxication from this source by the following procedures: 1. Several of the poisons are being destroyed within the various organs by oxidation processes; 2. Others are being retained or destroyed by the liver; 3. The majority of them is being eliminated from the system by various channels.

Bouchard endeavored to measure the quantity of toxic matters contained normally in the urine, assuming as the unit of measure (*unité toxique*) a quantity corresponding to the dose fatal to each kilogramme of body weight of a rabbit. In these investigations the normal human urine, after being neutralized by bicarbonate of sodium, was rapidly injected into a vein.

The injection of 10 to 15 c.c. (2 to 3 drachms) of normal human urine caused the following appearances: The pupils contract very strongly, and respiration becomes hurried but shallow. Soon the motions of the animal grow weak and uncertain, and urination increases. Death ensues finally under reduction of temperature and of reflex activity. Heart-beats and contractility of the smooth and striped muscles continue even after death has set in. If in the beginning of the coma the injection of urine is stopped, the animal recovers rapidly.

The fall of temperature caused by the injection Bouchard explains as caused by a diminished generation of heat; injection of water, on the other hand, increases the production of heat.

It is not a little interesting to find that, according to Bouchard's calculations, the quantity of poison eliminated by a healthy man during two days and four hours is sufficient to poison himself.

In another communication, Bouchard compares the poisonous substances of the urine eliminated during sleep and in the waking

condition. He found that the nocturnal urine, in spite of having a higher specific gravity than the diurnal secretion, contained only one-half to one-quarter of the poisonous quantity of the former. The urine reaches its toxic minimum about the time of one's falling asleep, and its maximum sixteen hours later.

The question naturally presents itself, whether the higher toxic character of the urine voided during daytime entertains any relations with the ingestion of food. During alimentation potassium and the alkaloids allied to the peptone group are being resorbed, and it is possible that the toxic substances eliminated by digestion in the liver enter the circulatory channels by means of another resorption. The day urine contains twice as much potassium as the night urine. Still, Bouchard showed that only one-fifth of the poisonous substances of the day urine and only one-third of the poisonous substances of the night urine could be attributed to the potassium salts. And still less can the other mineral salts of the urine be considered in this direction. If, however, the ingestion of food were the only factor in question, the maximum and minimum of the poisonousness of the urine would be directly opposed to each other as far as time is concerned.

The day and night urine, besides showing quantitative differences, present also some qualitative variations. The night urine causes cramps and convulsions; the day urine is a narcotic, and shows little or no convulsive action. Bouchard even found that both urines were antagonistic to each other, the one being the antidote for the other.

Bouchard's researches not yet being closed, we hope to have another opportunity of resuming this interesting topic.

URETHAN AS A PHYSIOLOGICAL ANTI-
DOTE TO STRYCHNINE.

Some very interesting observations have quite recently been made by PROFESSOR COZE on the subject of the physiological effects of urethan, and more particularly on its antagonism to those of strychnine. The first point is its extreme tolerance when injected subcutaneously, or into the peritoneal cavity. 8 to 10 grains so injected did not set up any local irritation in the frog, nor did 30 grains in the guinea-pig. No symptoms of gastric irritation were produced by from 80 to 100 grains given by the mouth in rabbits. The effect of the drug on the blood appears

to consist in an increase of the amount of oxygen (four per cent.); and the nervous exhaustion which follows its use may, perhaps, be attributable to the greater difficulty with which the blood parts with its oxygen in favor of the nervous system. Its influence on the tetanus of strychnine-poisoning was shown in the following manner: A frog weighing just under an ounce was injected with $\frac{7}{1000}$ of a grain of sulphate of strychnine (the minimum fatal dose being $\frac{1}{10000}$ of a grain, according to Falck); and as soon as tetanus declared itself, 5 grains of urethan were injected. Four minutes later, the tetanus ceased, and the muscles became completely relaxed. The next day, to the professor's astonishment, the animal was all right again. This experiment was repeated many times, with larger and smaller doses of urethan; the effects were not so lasting with doses of less than 5 grains, but, if the tetanus returned, it could be almost instantly arrested by a further injection. A mixture of strychnine and urethan injected together gave rise to no tetanic symptoms, but rather to muscular relaxation. On the guinea-pig, the effects obtained were the same; this animal being somewhat less amenable to the action of strychnine, $\frac{1}{80}$ of a grain of the drug was injected simultaneously into two guinea-pigs. A quarter of an hour later, both the animals being tetanized, one of them was injected (into the peritoneal cavity) with 15 grains of urethan; the convulsions ceased; the respiration coming down first to 72 and then to 40 per minute. The other animal, the check experiment, succumbed in twenty minutes to the effects of the strychnine. For a rabbit weighing two and a half pounds, the minimum fatal dose of strychnine is $\frac{1}{100}$ of a grain. Accordingly, to one weighing three pounds, successive injections were administered, amounting to $\frac{1}{40}$ of a grain of the sulphate of strychnine, rapidly followed by a violent attack of spasm; the animal leaped and fell down breathless, and in a state bordering on asphyxia. 50 grains of urethan were then promptly introduced into the stomach, after a few artificial respirations. In the course of a few minutes, the tetanic rigidity began to lessen, first in the hinder part of the body, respiration became deeper, and the animal fell into a quiet sleep. Two hours later, the rabbit raised its head without any convulsion, and gradually recovered. The next day, the only symptom was a little weakness in the hinder legs; and, on the next day but one, the animal had to all ap-

pearances completely recovered. The contrary experiment was also made, the urethanized animal being injected with $\frac{1}{40}$ of a grain of sulphate of strychnine, without the production of tetanus. All the experiments were repeated a certain number of times, but always with the same result. In other experiments, he administered a mixture of 50 grains of urethan with $\frac{1}{80}$ of a grain of strychnine, and no spasm or rigidity followed. He pushed the strychnine to $\frac{1}{4}$ of a grain without any apparent effect; and even with $\frac{1}{2}$ of a grain, although a few spasms manifested themselves, the animal did not die. On a dog weighing twenty-five pounds, $\frac{1}{2}$ of a grain of strychnine was counteracted with 75 grains of urethan, and in twenty minutes the animal got up and walked away with some difficulty. The next day he was all right again. Dr. Coze suggests that clinical use should be made of the drug in conditions attended with convulsions, and more especially in cases of tetanus.—*Brit. Med. Journ.*, July 24, 1886.

INTOXICATION WITH CHROMATE OF POTASSIUM.

In the *Deutsche Medicinische Wochenschrift*, xii. 17, 1886, DR. GLÄSER reports the following instructive case:

A gilder, 26 years of age, disgusted with life and its trials, had made up to his mind to die, and bought for this purpose five pfennige (one and one-quarter cents) worth of chromate of potassium, which he took dissolved in water. Soon after ingestion of the drug the man drank large quantities of milk. Vomiting and diarrhoea set in very soon. In the evening the patient was visited by the physician, who found widely-dilated pupils, severe gastric pains, and an albuminous urine. After washing out the stomach of the patient, the physician ordered castor oil, injections of oil of camphor, and applications of ice to the stomach. On the following day the gastric pains had decreased, the urine remained albuminous, and contained hyaline and granular cylinders. The temperature was elevated considerably above normal. Mouth and tongue showed no signs of cauterization. Ten days later the urine was normal. Diarrhoea and elevation of temperature, however, lasted for two weeks. The patient recovered fully.

Gläser believes that the patient took at least $2\frac{1}{2}$ dr. of the poison, and regards the recovery as remarkable, as authorities like

Prof. Naunyn, of Königsberg, claim that a few grains of the poison suffice to kill.

It seems probable that the milk drunk by the patient prevented the fatal issue.

BORIC ACID POWDER IN THE TREATMENT OF GRANULAR LIDS.

DR. JAMES L. MINOR states in the *New York Med. Journ.*, July 31, 1886, that he was led to the use of boric acid powder in the treatment of granular lids by the beneficial effect produced by this agent upon the tissues somewhat resembling the conjunctiva in this disease. He had seen granular tissue on the ear and on ulcers in other parts of the body and trunk, and observed that in the nasal cavities the thickened and swollen mucous membrane was often thinned down under the continued use of boric acid. He gives the following details as to its use :

1. *Method of applying the Powder.*—The lids being thoroughly everted, the pulverized acid is freely dusted over the exposed conjunctiva with a camel's-hair brush. The amount will, of course, vary, but in most cases of granular lids a quantity should be introduced sufficient to cover completely the parts to which it is applied. The frequency of application will vary from three times a day to three times a week—this difference depending upon both the individual and the disease. It will be safe to repeat the application as soon as the disagreeable symptoms which have been relieved by the remedy begin to appear again.

2. *Effects produced by the Powder.*—Its immediate effect is to produce a burning, gritty sensation, with some pain, lasting for five or thirty minutes, and a free serous discharge, after which relief is experienced, and the lids feel freer, lighter, and smoother than before its use. This beneficial effect lasts for a period varying from a few hours to several days. The conjunctiva at times shows reduction in swelling and thickening as soon as the irritation following its use has passed off. This is, however, more noticeable after the remedy has been used for a week or more, when perceptible thinning of the conjunctiva is observed, and clearing up of the cornea if pannus be present. When boric acid powder is applied to succulent tissue or a swollen mucous membrane, a free serous discharge quickly appears, which lasts for ten or twenty minutes. This discharge occurs largely at the expense of the volume of the tissue to which it is applied, and is followed by a shrinkage of the same. This is best illus-

trated in the nasal cavities, when they are closed or nearly so from swelling of the mucous membrane. A short time after the use of the acid the passages become clearer and freer, and this is noticeable to the examiner as well as the patient. This serous flux is probably of an osmotic character. Its escape relieves succulent tissue of its superabundance of serum, thereby causing contraction, which facilitates a healthier circulation and better nutrition. Its action as an irritant is in the same direction, and is especially instrumental in the cure of corneal affections. The power possessed by boric acid of restraining micrococcal development, of diminishing diapedesis, of lessening the amoeboid movement of leucocytes, and other tissue and chemical changes which it produces, are factors which enter into the theory of its action. When the powder is applied to a granular conjunctiva, it not only covers the entire membrane, but enters the cracks and crevices between the granulations, and brings about the changes indicated upon the conjunctiva as a whole and upon the granulation individually.

3. *Cases suitable for and Facts governing its use.*—Dr. Minor has used boric acid powder in all forms of granular lids, and in most varieties of conjunctivitis, with benefit. He thinks, however, that the papillary form of granular lids is most amenable to its influence. Pannus in every instance has been markedly improved, and in many cases cures have been effected. In ophthalmia neonatorum some cases have received benefit, but he relies but little upon the powder in purulent cases. On the contrary, it acts best when the secretion is scanty and serous. He has often noticed that the conjunctiva became less tolerant of its action after the powder had been used for three or four weeks, and in such cases the treatment has been changed with success. Boric acid in this particular is similar to other agents in general use for the treatment of granular lids, for it is often noticed that a remedy will *wear itself out*, as it were, and it becomes necessary to substitute another agent for the one which has been used. Boric acid is only one of these remedies, and is no more of a specific than others, yet it is an important addition to our list of efficient remedies for a disease which is often rebellious and always obstinate and protracted. It is less painful than other remedies, its effects in this particular being often recognized by the patient, who will ask to have the powder repeated, because it is less painful and more efficient in affording relief than other agents which have been

employed. Jequirity has done much toward simplifying and hastening the treatment of granular lids, but there will always remain a large contingent in which the special condition or the general surroundings of the patient will debar its use, and in such cases as these we must resort to those remedies that are known to be of value—possibly less brilliant, but entirely free from danger.

TOXIC EFFECT FROM THE PERMANGANATE OF POTASSIUM.

In view of the attention which potassium permanganate is now attracting in the treatment of amenorrhœa, two cases of toxic symptoms from its internal administration, reported by DR. W. D. BIDWELL (*Boston Med. and Surg. Journ.*, Aug. 12, 1886), are worthy of attention.

The first case in which Dr. Bidwell used the drug was that of a girl 19 years of age, with advanced phthisis and amenorrhœa of ten months' standing. Dr. Bidwell administered potassium permanganate in 2-grain capsules three times daily for two days, which was followed on the evening of the second day by a moderate flow lasting for two or three days. After this the girl's general health improved, and the flow appeared the following month just as previous to the commencement of the lung-trouble. Subsequently, however, she failed rapidly and died in about two months. Encouraged in this removal of the amenorrhœa by this drug, Dr. Bidwell's partner, Dr. Brock, prescribed 2-grain capsules of the permanganate for a young lady, unmarried, 22 years of age and somewhat debilitated, who had been suffering from amenorrhœa for four or five months. After the first dose she complained of severe burning pain from the throat to the pit of the stomach, was nauseated, pulse rapid and rather weak. This was supposed to be due to some irritating article of diet, and the patient drank a quantity of milk, which eased the pain somewhat. The next morning when she took the second capsule there was a repetition of the symptoms of the previous evening, only more severe. The patient was intensely nauseated and vomited, complained of intolerable burning in the stomach and throat, was almost pulseless, completely prostrated, and did not fully recover for two or three days.

Subsequently, in the case of another young lady, unmarried, and about the same age and condition of health, who had suffered from

suppression of the menses for two months, he prescribed 1-grain capsules with the same result, pain like a flaming fire in the stomach and throat and generally symptoms of shock and collapse.

THE VALUE OF BORIC ACID IN VARIOUS CONDITIONS OF THE MOUTH.

Boric acid is now officinal, and justly so. It has long been used in various metallurgical and ceramic operations, and more recently its preservative power has been abundantly demonstrated. It is this antiseptic power which gives it its great therapeutic value. It is a very stable compound—one of the most stable of the acids; it is not volatile, and only exerts its action when in solution; fortunately, however, it is soluble in more than one menstruum. Up till now, its chief application has been in connection with modern surgery, where the boric ointment, lint, and lotions all hold a prominent place.

There are, however, also spheres of usefulness for it in medicine, and DR. A. D. MACGREGOR (*Brit. Med. Jour.*, July 11, 1886) calls attention to the fact that it is especially valuable in the treatment of diseases of the mouth. It is the benefit of its local action we usually wish to gain, for, though sometimes given internally,—as in irritable conditions of the bladder,—its topical antiseptic effect is more often desired. In connection with its local application in various diseased conditions of the mouth, its solubility in water and glycerin, its unirritating character, its comparatively innocuous nature, and its almost tastelessness, are greatly in its favor. More particularly is this the case in treating such conditions in children, whose oral cavities cause them so much annoyance. Speaking generally, boric acid will be found useful in all conditions of the mouth, fauces, pharynx, and nose, where there is any abrasion of the epithelium; whether it be used as a powder, gargle, mouth-wash, pigment, or confection. More definitely, it is not contraindicated in any of the forms of *stomatitis*, though scarcely severe enough for the graver varieties.

In *simple catarrhal stomatitis*, a mouth-wash, containing from 10 to 15 grains to the fluid ounce, speedily cures the condition, and exercises the same beneficial influence in the *ulcerative* form, though there, in addition to the rinsing of the mouth, a local application, in the form of the powder or pigment, should be made to the individual follicular ulcers.

The powder simply consists of finely-powdered boric acid, mixed in various proportions with starch; the pigment is a solution of boric acid in glycerin (1 in 4 or 5). In both cases, the addition of chlorate of potassium is advantageous; indeed, Mr. Macgregor usually combines it, but it is not essential.

Nothing, according to Dr. Macgregor, is at once so rapid and so efficient, in the treatment of *parasitic stomatitis* or *thrush*, as this remedy. The youngest children do not object to its application. The *oidium albicans* quickly succumbs to its influence. For thrush in children, he especially recommends boric acid, either as a mouth-pigment or as a confection. Honey and sugar have both been condemned as being inadmissible, in combination, for the treatment of thrush; but, so far as children are concerned, Dr. Macgregor considers a confection (though made with honey), which has been impregnated with boric acid, gains more by its palatableness than it loses by the tendency of the saccharine matter to further the growth of the fungus. The boric acid at once does away with this tendency. Let the pigment be frequently painted with a brush over the patches, never omitting to do it after food has been taken; or, a little of the confection, simply allowed to dissolve in the mouth; and the days of the fungus will soon be ended. He has found boric acid, combined with its salt (borax), markedly beneficial. Borax alone, however, is not nearly so good.

In *pharyngitis* and *relaxed conditions of the throat*, a gargle, containing boric acid and glycerin, with either tannic acid or alum in addition, ought not to be forgotten.

Dr. Macgregor has also found combinations of this substance helpful and grateful to the patient in the condition in which we frequently find the mouth, tongue, and teeth in severe cases of typhoid fever. The mouth is hot; the lips dry, cracked, and glued to the sordes-covered teeth by inspissated mucus and saliva; the tongue dry, or even glazed and hard, brown or black, crusted with a foetid fur. Under such circumstances, a pigment, containing boric acid (30 grains), chlorate of potassium (20 grains), lemon-juice (5 fluid drachms), and glycerin (3 fluid drachms), yields very comforting results. When the teeth are well rubbed with this, the sordes quickly and easily become detached; little harm will follow from the acid present. The boric acid attacks the masses of bacilli and bacteria; the chlorate of potassium cools and soothes the mucous membrane; the

glycerin and lemon-juice moisten the parts and aid the salivary secretion.

So much for the soft parts; a word in conclusion regarding the teeth. Few medical men have ever given a prescription for a tooth-powder (such a matter is beneath their notice), and the selection of the ingredients for the various powders and pastes in vogue for the purpose of beautifying and cleansing the teeth is left entirely in the hands of those who certainly should not know better than medical men.

A tooth-powder should possess certain characteristics; it should be antiseptic, cooling, agreeable to taste and smell, and have no injurious action on the teeth. After use, it should leave the teeth white, and a sensation of freshness and cleanliness in the mouth. As an antiseptic in this connection, nothing can displace boric acid. For years Mr. Macgregor states that he has used the following powder, and can recommend it: Boric acid, finely powdered, 40 grains; chlorate of potassium, 3ss; powdered guaiacum, 20 grains; prepared chalk, 3i; powdered carbonate of magnesia, to 3i; otto of roses, half a drop. The boric acid in solution gets between the teeth and the edges of the gums, and there it discharges its antiseptic functions; the chlorate and guaiacum contribute their quota to the benefit of the gums and mucous membrane generally; the chalk is the insoluble powder to detach the particles of tartar which may be present, and the magnesia the more soluble soft powder which cannot harm the softest enamel.

CRUSHING THE GRANULATIONS IN TRACHOMA.

DR. KRAMSZTYK, writing in the *Gazeta Lekarski*, advises a method of treating granular lids or trachoma which was proposed by Dr. Wicherkiewicz, and which consists of a forcible crushing of the granulations. The eyelid is everted and held by an assistant, and is then subjected to pressure between the two thumb-nails, the operator moving his thumbs to and fro so as to act on as much of the eyelid as possible. Where the granulations cannot be reached in this way, such as those situated at the canthi and on the plica semilunaris, they are pricked with a needle, and then crushed by means of a pair of forceps or some other suitable instrument. The operation is very painful, and cocaine seems to be of little use. Under chloroform, the whole of the granulations can be crushed at

a single sitting. Otherwise the length of time and the number of sittings required to effect a cure depend on the abundance of the granulations and the patient's power of endurance. Where other disease of the conjunctiva exists, it must of course be attended to, and different measures adopted. The after-treatment consists in the prolonged application of cold-water dressings to the eye.—*Lancet*, August 14, 1886.

COCAINE IN CATARACT EXTRACTION.

In the *Journal of the American Medical Association* (August 21, 1886), DR. GEORGE E. FROTHINGHAM publishes some cases illustrating the safety of cocaine as an anæsthetic in cataract extraction, and summarizes his conclusions as follows:

1. Cocaine relieves the operator from the embarrassments during the operation for cataract that arise from vomiting; also from the agitation of his patient which results from excessive bronchial secretion, or stertorous breathing. These are often very troublesome when ether or chloroform is used.

2. The danger to the result which often arises from nausea and vomiting after the extraction, when other anæsthetics are employed, is very surely avoided when cocaine is selected as the anæsthetic agent and is properly used.

3. The danger arising from the depressing effect of cocaine upon the nutrition of the cornea is no greater than in cases where ether or chloroform are used. The depression of the circulation, which often arises from either of them, may affect very injuriously the corneal nutrition.

4. The disturbance of the circulation of the interior of the eye, and consequent danger of panophthalmitis from this cause, is probably less in using cocaine for this operation than in resorting to general anæsthesia.

5. The danger of sepsis and consequent panophthalmitis from the use of cocaine may be avoided by using only fresh solutions.—August 7, 1886.

ARBUTIN.

DR. BORISOFF, of St. Petersburg, having recently examined "the pharmacological action of arbutin, a glucoside obtained from the leaves of the *Uva ursi*," by means of experiments on dogs and frogs, finds that it has a decided diuretic effect, due to stimulation of the epithelium of the Malpighian bodies and urinary tubules of the kidney, and to increase

circulation of blood through the kidneys. Though large doses of arbutin exercise a paralyzing effect on the brain of the frog, little general disturbance is caused by the drug in warm-blooded animals, even if given in considerable doses. It exercises a distinct antiseptic influence in lessening the formation of pus in cases of purulent inflammation of the bladder and kidney. Dr. Borisoff thinks this drug may be found of much use in practice. He would give larger doses than those which have been suggested by some writers,—e.g., M. Levine. He would commence with from 1 to 2 grms. (15 to 30 grains), given several times a day in powder, or dissolved in water. He has made a diligent search through the scientific journals of all nations for the literature of the subject, and has collected no less than forty-three different articles, mostly from German sources, but with a few American and Russian exceptions.—*Lancet*, July 24, 1886.

POISONING WITH THE BALSAM OF INDIAN HEMP.

DR. SEIFERT, of the Würzburg University, publishes in the *Münch. Med. Woch.*, xxxiii. 20, p. 347, 1886, the following history of an intoxication produced by the balsam of cannabis indica.

A physician of Würzburg having noted cephalalgia, coma, and palpitation of the heart in a lady after the ingestion of the above preparation, took, for the sake of experiment, after breakfast a pill containing 0.1 grm. (1½ grs.) of the balsam. cannabis. indicæ (Denzel), which has been recommended as a prompt and safe hypnotic. Half an hour later a state of excitation set in which led to frightful mental and physical exertions. The physician felt convinced that he soon had to die and could only be held by the greatest efforts of his surrounding friends. Painful muscular contraction set in, the cardiac action was weak but excited, the pupils dilated and with a sluggish reaction to light. Two days elapsed before the physician regained his prior state of health.

Seifert warns his fellow-practitioners against employing the balsam, and claims that the extract of cannabis indica, in Vienna at least, is justly regarded as an unreliable and dangerous preparation.

The extract of cannabis indica, especially the fluid preparation, as sold in the American market is not known as dangerous and unreliable, and, we may say, is rather a popular remedy with many American practitioners.

THE MURMURS OF THE MITRAL AREA.

At a recent meeting of the Academy of Medicine in Ireland, DR. C. J. NIXON read a communication on cardiac murmurs of the mitral area (*British Med. Journ.*, August 7, 1886.) He referred to five varieties of mitral murmurs met with: (1) presystolic murmur; (2) postdiastolic murmur; (3) organic systolic murmur; (4) functional systolic or post-systolic murmur; (5) mitral *bruit de scie*. In discussing presystolic and postdiastolic murmurs, attention was directed to the acoustic character of the murmurs, the conditions with which they were associated, and the signs which might simulate them. Presystolic murmur might occur with: (a) a sharp clicking first sound; (b) a systolic murmur of mitral reflex; (c) partial or complete extinction of the aortic second sound; (d) a postdiastolic murmur. Postdiastolic murmur was a sign of an extreme amount of stenosis of the mitral area, and, judging from the chronometric position of the murmur, the term postdiastolic was more correct than diastolic. Having discussed the stages of mitral stenosis, as determined by the development of different physical signs, the subject of mitral regurgitant murmurs was next considered. In dealing with the systolic murmur of organic disease, a reference was made to Naunyn's murmur, which was regarded as an instance of a murmur produced by convection, owing to the peculiarities of change in structure of the mitral segments, just as Dr. Sansom had pointed out that organic changes in the mitral orifice might lead to a presystolic murmur being best heard over the tricuspid instead of over the mitral area. The systolic murmur heard over the situation of the left auricular appendix, in cases of chlorosis and such allied conditions, was not, as Dr. Balfour held, a murmur of mitral reflux, but a murmur developed in a displaced pulmonary artery. Systolic mitral murmur was developed in cases of hypertrophy of the left ventricle, associated with Bright's disease, without any organic change in the auriculo-ventricular valve; and it likewise was met with in cases of extreme dilatation of the left ventricle, as in a weak and dilated heart, and in cases of long-standing aortic incompetency. In such cases, the inadequacy of the mitral valve was due either to overstretching of the auriculo-ventricular zona tendinosa, or to a relative shortening of the papillary muscles, in consequence of the dilatation of the cavity of the ventricle. Systolic mitral murmur, of purely functional origin, was

next taken into consideration, and the conditions under which it is met with, and the special characteristics of the murmur, were dwelt upon. Dr. Nixon specially referred to the theory urged by Dr. Bramwell, to explain the occurrence of this murmur in connection with a peculiar arrangement of the muscular fibres of the heart, surrounding the auriculo-ventricular ring, constituting what was termed a muscular sphincter. The murmur was held to be produced by want of tone in the muscular fibres of the ventricle, and of the sphincter muscle, allowing such a dilatation of the orifice as to render the valves incompetent. Dr. Nixon showed that this view was incorrect, as the arrangement of the muscular structure of the heart, upon which it was based, did not exist. After alluding to certain conditions in the lung which might simulate a systolic mitral murmur, a brief reference was made to the existence of a mitral *bruit de scie*, met with in cases of aneurism of the heart, or where an abnormal communication existed between the aorta or pulmonary artery and one of the ventricles.

CONCEPTION OF MALE CHILDREN AT THE TIME OF THE POST-MENSTRUAL ANÆMIA.

DR. CAMILLO FÜRST, of Graz, publishes in the *Archiv für Gynacologie*, 1886, xxviii. 1, p. 14, a contribution to the interesting and frequently-discussed question, When and how is the sex of the conception-product determined? In the first section of the paper, which treats of "the time and causes of the determination of the sex in general," Fürst proposes certain maxims which, though not new, will interest our readers. According to the author we find a surplus of male conceptions in the working classes and country inhabitants as compared with the well-to-do people and the inhabitants of cities. Likewise, we can look for the surplus of male infants during hard times and the concomitant rise of food-prices, and before the ultimate extinction of a race. If a deficient nutrition of the procreators produces a surplus of male children, our author continues to argue, we can be certain that also the state of nutrition of the fecundated ovum, especially shortly after conception, will influence the sexual differentiation. And as after menstruation the vessels of the genital organs assume an ischæmatus character,—forming the so-called post-menstrual anæmia,—Fürst concludes that conceptions taking place

immediately or shortly after menstruation will give a surplus of males on account of a relatively bad nutrition of the fecundated ovum. To strengthen his theory the author utilizes the statements of women confined in maternities, who mostly with an astonishing certainty could remember the end of the last menstruation and the day of conception. The statistics of the mentioned institutions show a very considerable surplus of male children for the first four or five days following menstruation, and a surplus of female ones for the succeeding period.

A NEW VAGINAL IRRIGATOR.

The many inconveniences which attend the methods employed in private practice for administering vaginal irrigation are so objectionable that in many instances they are an absolute bar to the continuation of the process; this is largely due to the cumbersome character of the necessary apparatus. DR. JOHN W. GORDON, in the *Medical Record*, July 10, 1886, describes, however, an instrument which will do much to simplify the application of this process, and correspondingly increase its efficiency. The instrument consists of an injection-tube, which may be attached to, and operated by, all kinds of syringes—the ordinary rubber-bulb, alpha, fountain, or hydrant. This injection-tube is surrounded—a portion of its length—by a larger tube, which supplies means of ample drainage. Surrounding the intra-vaginal portion of the drainage-tube, and attached thereto, is a hollow, soft rubber bulb or tampon, conical in form, elastic and compressible, which, when the instrument is inserted within the vagina, gently and perfectly occludes the orifice of that canal, thus preventing the surplus injection fluid from escaping therefrom otherwise than through the drainage-tube, which communicates with a receptacle which is placed on the floor at the side of the bed or couch.

Thus, while this elastic and compressible tampon affords absolute immunity from leakage, it also, by means of the enclosed air-chamber, protects the sensitive vulva and perineum from undue contact with heat, thereby enabling the patient to make use of injection fluids at the highest requisite degree of temperature with entire impunity during the most lengthened period of irrigation.

Patients—without the aid or presence of an attendant—conveniently and willingly operate the instrument in an efficient manner while

occupying every variety of the recumbent position; indeed, all desirable postures are equally available, and no accessories whatever are required.

By virtue of the peculiar mechanism of this device and the simplicity of its operation the user easily controls the mechanical action of the injection fluids employed. Thus by simply compressing the drainage-tube between the finger and the exterior of the ring by which the instrument is held in place—thereby obstructing the outflow—the vaginal canal may, whenever advisable, be distended to the fullest extent by the gentle means of equable hydrostatic pressure, by which manœuvre the rugæ are thoroughly separated and the irrigating liquid finds direct access to the entire mucous surface of that organ, and may be thus retained indefinitely; while by means of the dependent position of the drainage-tube the injection fluid—obeying the fundamental law of hydraulics—wholly escapes from the vagina ere the instrument is withdrawn from its position at the termination of each period of irrigation; and hence, whatever the posture of the patient, and whatever the properties of the liquid used, perfect cleanliness of person and the avoidance of wetting or soiling clothing or bedding is insured from first to last.

The smallness of the apex of the tampon—five-eighths of an inch in diameter—renders the device no less available to the maid than matron.

THE INSUFFLATION OF IODOFORM INTO THE TRACHEA AFTER TRACHEOTOMY FOR DIPHTHERIA.

Were it not for the fact that after tracheotomy for diphtheria in children death is extremely common from the spread of the membrane down the trachea, the operation would be much more popular than it is at present. It is usually simple and successful enough as an operation, but the continuation of the disease in the trachea renders the final results far from satisfactory. After losing several cases from the above cause, it occurred to MR. GEORGE SHIRRES (*Lancet*, July 24, 1886) that the insufflation of iodoform into the trachea after the opening of the windpipe might do something towards preventing the appearance of membrane there, and might thereby lessen the probability of death.

The experiment proved eminently successful in two cases of which Mr. Shirres publishes full notes. In the first of these cases, that of a boy aged $4\frac{1}{2}$ years, tracheotomy was

performed under clear indications, and two hours after the operation the inner tube was removed and a thin insufflator passed down the outer one and about 10 grains of iodoform blown down the trachea. The child had a slight paroxysm of coughing, and, to judge from the expression of his face, seemed to have experienced a rather unpleasant sensation, but there was no other result. The insufflation was repeated every four hours. The next morning the tube was found comparatively clear, but the temperature was $102\frac{1}{2}^{\circ}$. Being rather afraid of iodoform poisoning, Mr. Shirres stopped the insufflation, but during the day the tube got frequently clogged with membrane and had to be removed and cleaned every two or three hours. At night the insufflation was renewed and repeated every three hours with excellent effect. During the night the external tube was accidentally removed, and when summoned to the patient, Mr. Shirres found him in great distress, breathing through the wound with considerable effort. The tube was reinserted with some difficulty, and from that time the patient rapidly recovered and the tube was permanently removed on the fifth day. According to Mr. Shirres, the best time to insufflate is just after the act of inspiration. When the iodoform is insufflated into the trachea the cilia on the mucous surfaces carry the particles of iodoform upward as far as the larynx, when they are removed with the mucus through the tracheotomy tube.

ON THE INFLUENCE OF ANTIPYRIN ON THE ELIMINATION OF NITROGENOUS MATTERS.

The steadily-increasing utilization of antipyrin as a prompt, convenient, and innocuous antipyretic has naturally stimulated researches as to the physiological aspects of the drug. Among these the influence which this drug exercises on the tissue-changes invites, of course, our special interest.

UMBACH'S experimental studies, executed in V. Nencki's laboratory at Berne, and reported in the *Archiv für experimentelle Pathologie und Pharmacologie*, vol. xxi., Nos. 2, 3, 1886, are well adapted to enlighten us in regard to the subject in question. Umbach made the observations pertaining to the elimination of nitrogen and uric acid on his own person, in order to obtain very reliable results. By rigorous dietetic measures the observer succeeded in establishing a certain normal figure for the elimination of nitro-

geneous matters, with but slight daily variations (1 dr. *pro die* at the utmost). Uric acid was determined by precipitation with muriatic acid, and the total value of the eliminated nitrogenous matters was obtained by Kieldahl's process, as modified by Petri. After ten so-called normal days Umbach took on two consecutive days 1 dr. of antipyrin each, and noted soon a general excitation, insomnia, and a peculiar burning sensation of the skin. The minimum of the bodily temperature was 36.1° C. (a reduction of 1.4° C.), and the frequency of the pulse decreased about fourteen beats per minute. It was ascertained that antipyrin, while not altering the elimination of uric acid, caused a reduction of thirty grains (corresponding to one drachm of urea) in the figures representing the total of the eliminated nitrogenous matters.

A second series of observations instituted on his own body furnishing quite analogous results, Umbach felt safe in announcing the following axiom: "Antipyrin, like quinine and other antipyretics, materially lessens the elimination of nitrogenous matters, and can therefore be said to cause a decrease in the tissue-changes of the respiratory and alimentary systems."

While antipyrin was thus shown to reduce the tissue-changes, it was proven by similar experiments that the sulphates (sulphide of calcium) cause an increase in the total of eliminated nitrogenous matters, with a simultaneous decrease of uric acid. Umbach explains this influence of alkaline salts—as in the case of carbonates—as resulting from the increased alkalescence of the juices, and the thus heightened oxidation processes in the body.

An investigation of the influence of antipyrin in fever patients instituted by Wiczkowski, led to very similar results. This observer also noted a considerable diminution of the chlorides in the urine in the apyrexia produced by antipyrin, even if a sufficient amount of chloride of sodium be ingested.

THE TREATMENT OF A FORM OF DIARRHŒA IN CHILDREN.

There is a form of diarrhœa in children, usually occurring after weaning, and from that period to four or five years of age, which is characterized by the most horrible offensiveness of the motions. This is so marked that it is generally at once mentioned by the parents. It is commonly met with in summer, but is not strictly what is known as

infantile diarrhoea, in which disease the stools are sour, but not necessarily foetid. Probably this form of diarrhoea differs from the diarrhoea of younger infants in being caused by the growth of the ordinary bacteria of putrefaction. It is not amenable to treatment by any astringent, nor has any alteration of diet much effect upon it.

DR. JAMES BRAITHWAITE (*Brit. Med. Journ.*, July 17, 1886), however, thinks that it may be successfully treated by disinfecting the bowel contents by means of salicylate of iron, as in the following prescription, which is suitable for a child two years of age: Sulphate of iron, \mathfrak{vi} ; salicylate of sodium, \mathfrak{vi} ; glycerin, $\mathfrak{z}iij$; water to three ounces. The iron and the salicylate should be dissolved separately, and the solutions mixed. The color is darker than port wine, and the taste not unpleasant. One teaspoonful must be given every hour, until the stools become well blackened, which happens in about twenty-four hours; or a larger dose may be administered at longer intervals. The medicine should then be given every three or four hours, and occasionally a small dose of castor-oil, to clear the bowels well out, and to get the secondary constipating effect of the oil.

In hospital practice, and amongst the poor, it is not so successful as it would be if it were possible to remove the child from the family living-room, the air of which is usually very impure, and is made worse by the smells incidental to cooking, and the presence of a sink.

AN EXPERIMENTAL STUDY OF THE TOXIC AND PHYSIOLOGICAL EFFECTS OF THE SALTS OF TIN.

From the study of DR. PATENKO, of St. Petersburg, relating to the action of the salts of tin, as published in the *Arch. de Physiologie*, vol. xvii., No. 1, 1886, we condense some points of general interest. The experiments made by the observer with the salts of tin on frogs, dogs, and guinea-pigs, appear essentially only to confirm what Orfila had long ago said of this metal,—viz., that it could never be used for pharmacological purposes. Patenko even doubts the vaunted anthelmintic action of metallic tin, for he found tæniæ and living ascarides in the intestinal tract of dogs which had received large quantities of tin in powder form.

The effects caused by subcutaneous injections of chloride of tin are merely to be ascribed to the caustic influence of the drug. If the latter is introduced directly into the veins

of dogs in a quantity of 1 to 2 cg. ($\frac{1}{100}$ to $\frac{1}{50}$ gr.) no reaction ensues. If, however, 5 cg. ($\frac{1}{20}$ gr.) are being employed, death sets in after general trembling, tetanic convulsions, Cheyne-Stokes breathing, and opisthotonus. A post-mortem examination of the brain always shows hyperæmia, cloudy nerve-cells, with invisible nuclei and numerous ecchymoses.

Seven grains of the salt given to the dogs internally did not produce any effects at all; 15 grains caused simply indigestion and temporary vomiting.

In the experiments made on frogs it was observed that the anæsthesia which set in fifteen minutes after the subcutaneous injection of tin into the plantar region of the foot limited itself to the foot and the lower part of the thigh without ever attacking the upper one. Control experiments, consisting in the injection of simple water, showed the exclusion of mere mechanical causes in the stated phenomenon. The motility of the part remained always intact, and the animals died later of gangrene.

POISONING BY BISULPHIDE OF CARBON.

Poisoning by bisulphide of carbon is so rare that the following case reported by MR. WILLIAM FOREMAN (*Lancet*, July 17, 1886) may be deemed of some interest. The case was that of a man, aged 63, who had swallowed probably about half an ounce of bisulphide of carbon with suicidal intent. When seen by Mr. Foreman a quarter of an hour after his having taken the poison he was sensible, but refused to give any information. There was a strong smell of bisulphide of carbon in the room. A tablespoon of mustard with 6 ounces of warm water was at once administered, and 40 grains of sulphide of zinc directed to be taken in warm water if the mustard did not act, while afterwards 15 grains each of bicarbonate of sodium and carbonate of magnesium every 10 minutes were ordered. Half an hour later he was completely unconscious, and could not be roused, and as he had not vomited, the stomach-pump was introduced, but only a small quantity of brown-colored liquid removed. The stomach was washed out with warm water; the pupils were normal, but reacted to light; conjunctiva suffused and insensible to the touch; respiration slow and stertorous; pulse rapid, compressible, varying from 150 to 160 per minute; surface of body cold and clammy; tongue thick and furred. Two tablespoons of brandy in half

a glass of water were given through the stomach-pump, but he never rallied, and died two hours after taking the poison. At the post-mortem examination, which occurred twenty hours after death, the following appearances were noted: Rigor mortis complete; pupils normal; hypostatic congestion of dorsum; body well nourished. On opening the head the dura mater was adherent to the calvaria; surface of the brain much congested; veins gorged with black blood. Brain substance healthy. Thorax: The left lung was slightly adherent at the apex; no effusion in the pleural cavities; lungs healthy. Heart: The right ventricle contained about an ounce of dark fluid blood; walls covered externally with a layer of fat; left ventricle firmly contracted and empty. Abdomen: The stomach contained about a quarter of a pint of fluid, with flakes of lymph in it, slightly ropy, and appeared to be water and mucus. A faint smell of bisulphide of carbon was perceptible. The submucous tissue was injected, and there was a number of minute hemorrhages. The posterior wall of the stomach was much more congested (to the size of a crown-piece) than the anterior surface. There was no perforation or abrasion of mucous membrane. The spleen was small, but healthy. The liver was normal in size, and healthy. The kidneys were surrounded with a large quantity of fat; they were slightly congested, but healthy. The bladder contained about two ounces of urine, having a slight smell of bisulphide of carbon. There was less of the cadaveric smell than is usual in post-mortem cases.

SALICYLATE OF COCAINE IN ASTHMA.

A comparatively new method of treatment in asthma nervosum has lately been tried by PROFESSOR MOSLER, of Greifswald. It is now well known that cocaine has not only a local action on the sensory nerve-endings, but also a central one, which, at first stimulating to the nerve-centres, may, if the drug be pushed, become sedative or even narcotic. By this peripheral or central effect, it may, therefore, act in such spasmodic diseases as asthma. Early last year, Beschorner published two cases of this disease which were much benefited by cocaine. In three cases, Professor Mosler has obtained excellent results. All these cases occurred in young people of 23 to 25 years of age, and were uncomplicated by any organic heart- or lung-disease. The drug was given subcutaneously, in doses of 0.4

gramme (6 grs; this seems an exceptionally large and dangerous dose), at the commencement of the attack. The first patient, who had a bad family history as regards lung-disease, and in whom the asthma had lasted eleven years, was relieved after the third injection; two more doses caused abeyance of the attacks (which occurred previously every day) for a fortnight, when the patient was lost sight of. In the second and third cases, the treatment was more rapid in cutting short the attacks, which in the end were postponed for three or four weeks, during which the patients continued under observation. The injections caused, in one case, a slight sense of faintness and the appearance of dark spots before the eyes; but these symptoms soon vanished. It is, of course, impossible to draw from these cases any conclusion as to the permanent benefit of the treatment. Extended experience will perhaps show that the drug is only a palliative. It is in the hope of inducing other practitioners to try the treatment that Professor Mosler has published the results of his cases.—*British Med. Journ.*, July 17, 1886.

ADENOMA OF THE PLACENTA.

The affections of the placenta have not yet received the degree of attention to which, on account of the relations they often entertain with abortion or the progress of confinement, they are fairly entitled. Quite recently DR. KLOTZ, of Innsbruck, showed in a valuable paper appearing in the *Archiv für Gynæcologie*, that the placenta is liable to an affection which has hitherto been never observed, viz., the adenoma. The following theses embody the principal conclusions of Dr. Klotz's paper:

1. There exists a true adenoma of the placenta starting from the spongy portion,—i.e., from the ectatic gland-spaces of the decidua serotina.

2. The formation of the adenoma begins with the gradual fusion of the cells of the decidua into an homogeneous protoplasmic mass resembling embryonic connective tissue and having a nucleus; besides, the glandular epithelium is reduced to a tissue of its own, from which new epithelial cells are formed.

3. The fusion mass grows by budding of its connective-tissue constituents; hence the adenoma of the placenta belongs to the connective-tissue tumors.

4. The adenoma of the placenta is liable to return after removal, unless powerfully cauterized.

5. Death and expulsion of the foetus are consequences of the adenoma.

6. The placenta is retained for weeks and months; its spontaneous expulsion is probably impossible.

7. Klotz observed three cases of adenoma of the placenta, in none of which (after an expiration of five years) a return was witnessed. All three women enjoy at present perfect health, but of course conceive no longer.

ELECTROLYSIS FOR THE TREATMENT OF URETHRAL STRICTURE.

At a recent meeting of the Academy of Medicine in Ireland, Mr. P. J. HAYES read a paper on the treatment of urethral stricture by electrolysis, the comparatively novel method practised by Drs. Robert Newman, of New York, and S. T. Anderson, of Bloomington. He gave the details of three cases, in which he had himself adopted the method with encouraging results (*British Med. Journ.*, July 17, 1886). He strongly advocated the trial of electrolysis, even for the most complicated forms of stricture. It did not at all interfere with the subsequent employment of other measures, minor or serious. Electrolysis was best adapted for the treatment of annular strictures rather limited in length. Having ascertained the situation of the stricture, the tip or exposed metal bulb of an electrode ought, if possible, to be lodged within it; or, if this was impracticable, the tip must be in close contact with the anterior face of the stricture. Then a small galvanic battery was connected by its negative pole with the urethral electrode, while the positive might be attached either to a moist sponge electrode, or, better still, to a thin metal plate covered with moistened chamois-leather. The positive electrode would be advantageously applied either to the patient's perinæum, or against the inner side of one thigh. As to the strength of the current to be employed, the patient's own sensations would prove the best guide. The current should be perceived, but it ought not to be pushed to cause pain, nor should the surgeon attempt more than it was needful to effect at each sitting, using only mild currents, and manipulating the electrode with gentleness, and never pushing it through the stricture, as it accomplished more by being allowed to remain in the stricture than by being caused to quickly traverse it. The sittings might be repeated every ten days, if desired. Cauterizing would be pro-

duced when strong currents were employed; but, with mild currents, the gradual breaking up of fibroid tissue was effected by a combination of chemical decomposition and vital absorption until but a thin lamella of cicatricial tissue remained to mark the seat of the stricture.

INHALATIONS OF PURE CARBOLIC ACID IN WHOOPING-COUGH.

Though the benefits derived from the inhalation of carbolic acid in the treatment of diphtheria and pertussis have long been well understood by practitioners, the exhibition of sufficiently strong solutions of carbolic acid have nevertheless been omitted in view of the great sensitiveness of children against this drug. As we learn from the *Deutsche Medicinische Wochenschrift*, 1886, xii. 21, Dr. PICK, of Coblenz, has treated a number of children affected with whooping-cough by fixing an inhalation-mask in front of the mouth and nose and pouring into a piece of cotton in the interior of the mask, 15 to 20 drops of pure (liquefied) carbolic acid. The mask has to be worn, if possible, the entire day, but at least for six to eight hours, and the cotton is to be renewed three times daily. A careful investigation of the urine will give a timely warning of the danger of an intoxication.

In the cases treated by Pick the results were entirely satisfactory, so that he feels justified in recommending these inhalations as an efficient means to combat the affection.

THE USES OF HOT WATER IN SOME OF THE CORNEAL AND CONJUNCTIVAL INFLAMMATIONS.

The above is the title of a paper read by Dr. B. E. FRYER, of Kansas City, before the recent meeting of the American Ophthalmological Society (*New York Med. Journ.*, August 14, 1886). In this plan of treatment water was used at as high a temperature as could be borne. After a few hours, a temperature of 140° F. could be tolerated. The water should not be cooler than this, but as much hotter as the patient could endure. A method of using it was by fomentation with a napkin dipped into the hot water and (not wrung out) applied to the closed eyelids. This was continued for half an hour at a time, and repeated every one, two, or three hours, day and night. It might also be applied by suspending a vessel above the patient and allowing the water to escape through a tube, thus

keeping up a continuous action. In some cases the temperature might be raised almost to the boiling point. During the intervals between the applications, a cloth wrung out of the hot water was allowed to remain over the eyes. In some cases of purulent ophthalmia the hot water might be thrown into the conjunctival sac. In purulent conjunctivitis this application cut short the attack more quickly and safely than the use of ice-cold water. In gonorrhoeal ophthalmia it quickly lessened the swelling and diminished the tendency to ulceration of the cornea. If ulceration had begun, it was less likely to progress, and the amount of cicatricial tissue was lessened. In these cases the author occasionally used instillations of sublimate solution or finely-powdered iodoform. In catarrhal and phlyctenular ophthalmia it was a good adjuvant. In acute and chronic keratitis it was useful. Its most marked effects were seen in cases of corneal ulcer. The small amount of opaque tissue left was astonishing. The pain and photophobia were also diminished.

DR. SAMUEL THEOBALD, of Baltimore, had not used hot water in purulent troubles, but in interstitial and specific keratitis its use had been beneficial, and he thought it favored absorption of the opacity.

THE RELATIVE VALUE OF VARIOUS DISINFECTING AGENTS.

The infection of a wound during an operation springs either from its contact with hands not freed from micro-organisms, instruments, sponges, etc., or from the entrance of bacteria from the non-sterile atmosphere of the operating-room. The former source of infection is by far the more important one.

In order to experimentally ascertain the relative value of the most popular disinfecting agents, DR. KÜMMEL, of Hamburg, brought sponges, instruments, and other utensils of the operating-room in contact with Koch's gelatin-plates, and noted the number of subsequently formed colonies after using the various modes of disinfection (*Archiv für Klin. Chirurgie*, 1886, xxxiii. 3, p. 531).

Kümmel noted very essential differences between the cases in which the disinfection had been preceded by washes with potassium soap and those in which this precaution had not been taken.

Instruments taken from a cupboard, in which they had remained for some time, but free from every visible soiling, could not be sterilized by an immersion into a five per

cent. solution of carbolic acid, lasting two minutes. A contact of ten minutes with the solution, however, sufficed to kill all germs.

Other antiseptic agents, such as the sublimate soap, gave still less favorable results. The one per cent. Hg soap did not produce any reliable sterilization in fifteen minutes.

On the other hand, knives used in the dissecting-room and exceedingly soiled were rendered almost completely sterile by simply washing them with water and potassium soap. Complete sterilization could invariably be looked for by an immersion into a five per cent. solution of carbolic acid after the preceding use of the potassium soap. The same held true of sponges: disinfection without the preceding use of the potassium soap was uncertain and required ample time, while following its use it was both reliable and quick. The hands presented greater difficulties to a complete sterilization than either knives or sponges. Potassium soap and a five per cent. solution of carbolic acid by far excelled, also a one per cent. sublimate solution.

Kümmel also endeavored to sterilize the air of a room before and during an operation, but, as could be expected, failed completely. A spray being in action for some time did not even diminish the number of germs in existence, and only after the apparatus had ceased to work, the colonies were noted to have somewhat decreased. Very good results were obtained by thoroughly washing the walls and all the furniture in the room.

CACUR, A KAFFIR EMETIC.

The extensive use of emetics in the treatment of disease by the Kaffirs of South Africa is well known by dwellers with or travellers among these races.

One of their most frequently-employed emetics is a green or yellowish-green fruit known as cacur, cacuo, or small bitter apple. The plan of administration pursued by the Kaffirs is to heat the fruit, squirt out the contents into their mouths, and swallow the material thus expelled. In a quarter of an hour or thereabouts emesis then occurs. Two of the pepoes are so administered in the case of an adult; one in the case of a child. The plant grows largely in gardens as a weed, especially where melons and pumpkins are cultivated. When ripe, it is quite yellow, but is used by the natives when green or greenish-yellow. The plant is obviously one of the *Cucurbitaceæ*, and has been pronounced by

Prof. Oliver to be the *Cucumis myriocarpus*. The plant produces fruit very abundantly,—subglobose pepoes, about the size of a large gooseberry, green when unripe, yellow when mature, and beset somewhat sparingly with short soft prickles. Each pepo weighs from 60 to 100 grains, and on section presents three parietal placentæ, with numerous seeds embedded in a soft viscid pulp, which becomes much more fluid when warmed,—possibly the object of the heating practised by the Kaffirs. The pulp has a faint cucumber-like odor, and is decidedly but not intensely bitter. The rind is soft, and can only be peeled off with considerable difficulty; it, too, is somewhat bitter, but much less so than the pulp. The testa of the seeds, which are exalbuminous, have a feebly-bitter taste; the seed otherwise is tasteless. The plant, apart from the pepoes, seems inactive.

MR. G. ARMSTRONG ATKINSON obtained a specimen for investigation, and publishes the results of his study in the *Edinburgh Medical Journal*, July, 1886.

To test its action he took, on an empty stomach, 20 grains of the fresh pulp, and in about half an hour felt somewhat nauseated, but was not sick. Four or five hours afterwards he had some griping pains, and two or three hours after this was slightly purged. To a large fasting dog he administered, bruised with water, a pepo weighing 69 grains. No sickness was produced, and the dog seemed generally unaffected. In about eight or nine hours very watery diarrhœa occurred, which lasted for well on to twenty-four hours, the evacuations being bilious-looking, and containing much mucus. Some days later two pepoes, weighing together 118 grains, were administered in a similar manner, and in twenty minutes very free emesis occurred, the dog vomiting several times, the last vomit containing a little blood. Considerable salivation was also produced at the same time. After the vomiting ceased the animal rapidly returned to its normal condition, and no purgation followed.

From these brief notes it will be seen that the action of the drug is that of an emetic and of a cholagogue purgative; purgative in non-emetic doses, and in doses sufficient to produce emesis causing purgation, if sufficient of the active principle has been retained. Its emetic action is probably local.

As to the chemistry of the plant, Mr. Atkinson had, unfortunately, not sufficient material to make a satisfactory examination; but, so far as he went, he could find no trace of

any alkaloid, the activity seeming to depend upon a bitter neutral principle, readily soluble in water, or in eighty per cent. alcohol.

ON CADAVERIC AND PHYSIOLOGICAL ALKALOIDS.

The assumption that Selmi was the first to prepare and investigate the cadaveric alkaloids or ptomaine group appears to be erroneous; at least ARMAND GAUTIER, of Paris, claims this priority for himself in his recent exhaustive treatise of this subject published in the *Bull. de l'Acad. de Mèd.*, 1886, vol. xv., Nos. 2, 3. Omitting the process of preparation of these ptomaines, or, as Gautier terms them, "bacteria alkaloids," we will briefly discuss their physiological and toxicological relations.

The ptomaines, as prepared by Gautier, belong chiefly to the pyridine and hydropyridine group, and represent oily, colorless fluids of a strongly alkaline reaction, which neutralize strong acids, and partially even abstract carbonic acid from the atmosphere. They also form crystallizable salts, are easily oxidized, and well capable to reduce metallic salts. Among these alkaloids parvolin, collidin, and hydrocollidin represent the principal products of bacterial decomposition.

As to the physiological effects of the ptomaines, Gautier quotes the conclusions arrived at by Gianetti and Corona, two Italian observers of note, as follows: "The cadaveric poisons are generally intensely poisonous, and cause in frogs dilatation of the pupils, followed by contraction, tetanic convulsions, with subsequent muscular relaxation, cardiac weakness, and total loss of the sensibility of the skin. Gautier himself instituted several experiments, with a certain base ($C_8H_{11}N$), which he had found to be identical with hydrocollidin. He found that in birds the alkaloid caused at first paralysis of the lower part of the spinal cord, the pupils, however, remaining normal. After death the heart was found to be filled with blood and in its diastolic phase.

Discussing the forensic aspects of the alkaloids, Gautier does not believe in the possibility of mistaking them for purposely-administered vegetable alkaloids.

Alongside of these cadaveric poisons there is another group of alkaloids that claims our attention, viz., that found normally in the economy, at least under certain conditions. These alkaloids are known under the name of leucomaines, and have been known ever since

Liebig, in 1849, discovered kreatinine, which is the best-known representative of this group. Next Liebreich found kreatine in the normal urine in 1869; then Pouchet allantoine and carnine, 1880, likewise in the urine. Gautier himself investigated the gland secretions of poisonous snakes, and ascertained the presence of alkaloidal substances without finding, however, the active principle of the saliva to be of an alkaloidal nature. Even from human saliva Gautier prepared an alkaloid, which, applied to birds, caused stupefaction.

In his conclusive remarks, Gautier dwells on the constant appearance of hydrocollidin among the cadaveric poisons, and regards this alkaloid, as it were, as the product of transformation of the most energetic species of bacteria. The leucomaines—*i.e.*, the alkaloids generated during life—are somewhat less toxic in their effects than the ptomaines, and partially act as narcotics upon the central nervous system, and partially upon the intestinal tract. Gautier regards the origin of leucomaines as a process of oxidation taking place in the animal tissues after the manner observed in anaerobic bacteria. The accumulation of these products of tissue-change, due to their insufficient elimination through the skin, kidneys, and intestines, cause symptoms similar to those described above, which, in their entity, form an intoxication disease. The organism, on the other hand, resists this autoinfection by direct oxidation and elimination, and only if either of these physiological processes is interfered with the leucomainic intoxication sets in. Finally, Gautier remarks that he found—for example, in the snake-poison—alongside of these alkaloids other nitrogenous but non-crystallizable substances, which are much more poisonous, and which will form the subject of future investigations of his.

CONTINUOUS RECTAL ALIMENTATION— AN ARTIFICIAL STOMACH.

Thanks to the labors of Sir William Roberts, of Manchester, and others in the field of artificial alimentation, the practice of sustaining life by rectal feeding is becoming more encouraging. The difficulty, however, in intermittent administration lies in the fact that the enemata, though small, are apt to cause a desire for defæcation. It occurred to Dr. DUNCAN J. MCKENZIE (*Brit. Med. Journ.*, June 19, 1886) that we might imitate the process of nature more closely by the gradual passage of a fluid from an artificial cavity in which its digestion takes place into the rec-

tum for absorption. In this way the supply keeps pace with the absorption, and the belly is not loaded. The way in which he proceeds is as follows:

A piece of celluloid catheter (No. 5) is passed into the anus for about two inches; if passed too far, there is a risk of its being closed by the folds of gut. When once introduced, the sphincter closes upon it, and its presence is hardly felt by the patient; and the celluloid, rigid when introduced, becomes rather softer from the heat of the body. Previously to introduction, this piece of catheter is passed through a thick piece of india-rubber, perforated so as to grasp the catheter tightly. To the four corners of the india-rubber are attached tapes, which are tied, two in front and two behind, to a band round the loins. The india-rubber is passed close up to the anus, and the tapes are tied as tight as convenient. Over the outer end of the catheter is passed one end of a piece of fine india-rubber tubing, such as is used for babies' feeding-bottles. The piece of tubing should be about two yards long, and its other end slipped over a metal tube let in close to the bottom of a moderately tall narrow vessel, made of tin or other material, and capable of holding a pint of fluid. To increase steadiness, the bottom is leaded on the outside. The only other apparatus required are a milk-strainer to fit the mouth of the vessel, a table about the same height as the bed on which the patient lies, a few small boxes, or some suitable support by which the elevation can be varied, and an ordinary tea-cosy.

A pint of milk is warmed to a temperature suitable for pancreatic digestion; a little bicarbonate of sodium, and a proper quantity of some preparation of pancreas is added, and it is allowed to stand in a moderately-warm place for half an hour. It is then passed through the strainer into the vessel mentioned above. Dr. McKenzie finds that, after standing half an hour, the milk leaves little or no curd upon the strainer, and, when strained, readily passes through the tubes. If the curdling of the milk, by the pancreatic extract, give trouble, it may be prevented by previously adding one-fourth of its bulk of water to the milk (Roberts).

The milk, having been put into the vessel, which acts as the artificial stomach, it is raised from two to two and one-half feet above the level of the patient's bed, the height being altered according to the rapidity with which the milk runs through the tube. The vessel is then covered with the cosy to

keep it warm, and, if necessary, a heated plate may be put under it at intervals. The pint of milk should run into the rectum in about three hours, which time fairly corresponds to the average digestion-period of pancreatized milk. If a desire for defæcation be felt, the flow should be made slower, or the apparatus entirely removed for a time.

When the milk has all run out, the apparatus is removed, some clean water passed through the tubes, and the patient allowed to rest for a time before reintroduction.

In this way, a patient of Dr. McKenzie's, suffering from cancer of the stomach, in whom the colon was obstructed at the junction of the transverse with the descending portions, received an average of three pints of milk per day for a month, with an average daily evacuation of about a pint, consisting chiefly of curd; his nutrition was fairly kept up until vomiting of blood, mucus, and fæcal matter became excessive; and, after death, the whole descending colon was found well nourished and containing condensed milk. His evacuations generally took place from two to eight or nine hours after milk had been administered, care being taken not to give any when the rectum felt irritable.

FILEHNE'S LATEST OBSERVATIONS ON CAFFEINE AND ALLIED SUB- STANCES.

PROF. W. FILEHNE, of Erlangen, has instituted another series of experiments with the caffeine group, and communicated his valuable results to the *Archiv für Anatomie und Physiologie (Physiol. Abtheil.)*, 1886, Nos. 1, 2, from which we have prepared the following condensation:

I. CAFFEINE.

Caffeine produces, according to the majority of authors, when given to frogs in a sufficiently large dose, muscular rigidity and even tetanus. Schmiedeberg, however, claims that these effects can only be obtained in the rana temporaria, and that in the rana esculenta the convulsive phenomena originating from the central nervous system predominate. On the second or third day of the experiment these differences equalize each other, the former species of frogs showing a heightened reflex irritability, and the latter a certain muscular rigidity.

In no other animal besides the frog does caffeine produce such prompt and complete

rigidity, though Johannsen and Binz speak of muscular stiffness caused by the drug in cats and dogs. Filehne has, by his carefully-conducted experiments, disproven the claims of Schmiedeberg, as stated above. 7 mgrms. of caffeine injected under the skin of an esculenta weighing about 20 grms., sufficed to generate a reflex hyperirritability with irradiation of reflexes; 12 mgrms. caused very soon a lasting tetanus. 0.05 to 0.15 gm. of caffeine introduced into the stomach produced a muscular rigidity, appearing very promptly and rapidly reaching a maximum. This shows that, provided larger doses are used in experimenting, there is but a difference of degree and not of principle in the behavior of the two species of frogs under the influence of caffeine.

II. THEOBROMINE.

The observations made heretofore on theobromine are very scanty. According to Mitscherlich (*Der Cacao und die Chocolate*, Berlin, 1859, p. 88) the drug has qualitatively an action similar to that of caffeine; 0.06 gm. of it suffice to kill a frog. Filehne experimenting with theobromine obtained by the hypodermic injection of 7 mgrms. in frogs no other effects besides a reduction of the motor power. Using after four hours 5 more mgrms., he noted the gradual decrease of voluntary motions and reflex action until death set in through central paralysis after eighteen hours. Quite different effects, however, were obtained by the employment of large doses (15-30-50 mgrms.) from the beginning. Fifteen minutes after administration of the drug the entire muscular apparatus of the animal assumed a rapidly-deepening rigidity, from which the cardiac muscle alone is exempted. This rigidity takes place just the same in muscles, the nerve of which has been cut, and also in curarized animals, but not in parts in which the artery has been tied. Shortly before appearance of the rigidity reflex sensibility is distinctly lowered.

III. XANTINE.

The spinal paralysis and muscular rigidity, as produced by both caffeine and theobromine, can likewise and to a still greater extent be provoked by xantine. If the iliac artery is tied, we obtain a gradual decrease of the voluntary and reflex motions of the corresponding extremity without any preceding increase of reflex sensibility. It is noteworthy that while even after larger doses of caffeine and theobromine the heart-muscle remains intact, this organ under the influence

of xantine presents early signs of rigidity, though it continues to beat.

DERIVATIVES OF CAFFEINE.

(a) *Hydroxy-Caffeine*.—This substance injected into the lymph-spaces causes, even in a quantity of 100 mgrms., no obvious effects. Filehne attributes this to the fact of the drug being readily decomposed in the organism; doses of 0.2 grm., however, produced caffeine-like symptoms.

(b) *Diethoxy-hydroxy-Caffeine*.—This derivate showed itself also to be inert in the frog, and very probably for the reason given above.

(c) *Ethoxy-Caffeine*.—The addition of the ethyl group lends to this chemical a peculiar narcotic influence upon the brain and spinal cord. It causes stupefaction and paralysis without affecting the circulation or (to any great extent) the motor apparatus. In rabbits the drug causes sopor and actual sleep if injected into the stomach in a dose of 0.5 grm. In man the drug causes no effects in a dose of 0.2 grm.; after gifts of 0.3 to 0.5 grm. the arterial tension is raised (the pulse increasing two to six beats per minute), the face reddens, sweating and a soporous state sets in. Doses of 0.5 to 0.75 grm. produce severe headache and coma. Gifts of 0.1 to 0.5 grm. cause a somewhat sounder sleep than normally present; still larger doses, however, disturb the sleep. Filehne advocates the trial of this drug in cases of megrim.

PRODUCTS OF DECOMPOSITION OF CAFFEINE.

(a) Caffeidine shows in doses of 100 mgrms. a slight caffeine-like action. (Stricker.)

(b) Caffuric acid causes in the same dose a temporary increase of the reflex excitability and a certain muscular relaxation.

(c) Hypo-caffeine is totally inert in doses of 50 mgrms.; in larger doses a slight hyperæsthesia results.

(d) Caffoline is totally inert.

SUBSTANCES ALLIED TO THE XANTHINE-CAFFEINE GROUP.

(a) Guanine is in doses of 100 mgrms. and more is inert in frogs.

(b) Uric acid (an oxy-xantine) is likewise inert.

SARKINE.

Though, according to Fischer and Kossel (*Zeitschrift für physiologische Chemie*, vol. vi. p. 428), the chemical relationship of sarkine to the xantine group is of a doubtful nature, Filehne examined its physiological action, nevertheless, in connection with the

above researches. Doses of 15 to 100 mgrms. cause an increased reflex sensibility and reflex irradiation, with spontaneous paroxysmal cramps becoming ultimately tetanic in nature. Death finally ensued under symptoms of extreme muscular rigidity.

CARBOLIC ACID IN THE TREATMENT OF WHOOPING-COUGH.

DR. C. W. SUCKLING writes to the *British Med. Journal*, July 24, 1886, that he has used the glycerin of carbolic acid with great success among his out-patients at the Children's Hospital in the treatment of whooping-cough. He had previously used almost every other drug in different cases, but never with any very satisfactory results. He states that he has notes of twenty-three cases treated with glycerin of carbolic acid.

Half a minim in peppermint-water is sufficient for a child a year old, the dose increasing with the age. In twenty cases, relief was quickly given; the general condition of the patients was at once improved, and the number and severity of the paroxysms of coughing diminished. None of these cases attended more than a fortnight, while the usual length of attendance is certainly twice as long. In three cases, the carbolic acid failed to give relief. There was no doubt as to the nature of the illness in these cases, for in all the characteristic cough was heard, or ulceration of the frænum present.

Dr. Suckling has observed ulceration of the frænum to be present in fifty per cent. of cases of whooping-cough, and he believes that its presence is pathognomic of the disease. He also believes carbolic acid almost deserves to be called a specific for pertussis.

THE PHYSIOLOGICAL AND THERAPEUTIC PROPERTIES OF ETHOXY-CAFFEINE AND OTHER DERIVATIVES OF CAFFEINE.

DUJARDIN-BEAUMETZ, convincing himself of the correctness of Filehne's observations on the derivatives of caffeine, tried ethoxy-caffeine in a number of affections marked by cephalalgia (*vide Bull. de Thérap.*, vol. cx., March 30, 1886). In order to render this drug soluble in water, and at the same time to obviate the dyspeptic symptoms easily caused by it, Dujardin-Beaumetz recommends the following mixture:

R Ethoxy-caffeine,
Sodii salicyl., aa gr. iii;
Cocain. mur., gr. iss;
Aque tiliæ, fʒii;
Syr. simpl., fʒi. M.
S.—Take at once.

The results obtained with this drug in megrim were highly satisfactory. In one case the drug was given in a dose of about 1 grain at the height of a paroxysmal pain in the head, with the effect of wholly removing the pain in two hours. In four other cases the pain was abated in less than one hour. Dujardin-Beaumetz advises to give no larger doses than 3 grains, since 7 grains can produce gastric cramps, nausea, and even cerebral disturbances. In cases of prosopalgia the drug proved likewise to bring relief and cause sleep.

These and similar observations have led Dujardin-Beaumetz to assume that ethoxy-caffeine prevents the therapeutic and physiological effects of caffeine in a modified manner, and that it owns a pronounced sedative or narcotic action, allowing of its advantageous substitution for caffeine in cases of megrim.

THE INFLUENCE OF PURE TEREbene ON FERMENTATION.

In a lecture recently delivered at the Westminster Hospital, DR. MURRELL referred to the power exerted by pure terebene in arresting fermentation, and gave the details of some experiments which he had made. He took two beakers of the same size and shape, and, in each of them, placed two hundred and sixty-five cubic centimetres of water and a little hay. To one of them he added half a cubic centimetre of pure terebene. Both beakers were covered with glass plates, and placed in a warm chamber, at 36° C. (96.8° Fahr.). Two days later the test-beaker was examined, and the fluid was found to be swarming with moving particles, so minute that they could with difficulty be seen with a Zeiss D. The other beaker smelt strongly of the pure terebene, but nothing moving could be detected when examined with the same lens. On the ninth day from the commencement of the observation the hay-infusion was turbid; a film had formed on the surface, and the fluid was distinctly offensive. Under the Zeiss D numerous monads were seen, with large numbers of moving organisms. The other beaker was clear; there was no film on the surface; the slight sweet smell of pure terebene was still perceptible, and moving organisms and

monads were absent. On the eleventh day the temperature of the warm chamber was somewhat higher, having risen to 40° C. (104° Fahr.). The specimens being again examined under the Zeiss and a Ross's one-eighth power, the field of number 1 was found to be covered with moving organisms, but in number 2 nothing was to be seen on most careful examination. The test was a rough one, but it is clear that a two per cent. solution of pure terebene will arrest fermentation in a hay-infusion. On a subsequent occasion the experiment was repeated with 1 part in 1000 of pure terebene, the infusion being kept this time at a temperature of 20° C. (68° Fahr.). In fifty-one hours the test-solution, examined with a one-twelfth Ross's objective, was found to contain hay-bacilli in large quantities in motion, also numerous paramœcia. The solution containing terebene (number 2) was not absolutely free from moving organisms, but they were fewer and less developed, and no paramœcia were found. At the expiration of seventy-five hours number 1 was seen to be swarming with paramœcia and hay-bacilli breaking up into spores; number 2 contained only a few moving organisms, and no paramœcia. Two days later number 2 was swarming with paramœcia, whilst they had all disappeared from number 1. The influence of pure terebene on paramœcia was demonstrated in another way. A specimen of hay-infusion swarming with paramœcia was put under the microscope and examined with Ross's one-twelfth inch. Several large specimens being under observation, a drop of pure terebene was placed at the edge of the cover-glass, and drawn through with blotting-paper. The paramœcia were at first but little affected, but after a time their movements almost ceased, although their cilia could still be seen languidly beating. A drop of water was then drawn through, and almost immediately the paramœcia became as active in their movements as ever.

Pure terebene was found to have the power of arresting or preventing the fermentation of yeast. Two small bottles, of identical size and shape, were filled with a mixture of saccharine urine and yeast. To one bottle was added pure terebene, in the proportion of 1 in 450. The bottles were inverted in the ordinary way, in a flat vessel containing water, and were placed in the warm chamber. In forty-eight hours fermentation had taken place in one bottle, and all the fluid had been driven out, while the bottle to which terebene had been added remained full. On the third day

a few small bubbles of gas appeared in it, and on the seventeenth day it contained only about one-fourth of gas. The effect of pure terebene in this experiment was very marked. On another occasion two bottles were taken, each holding six and a half ounces. In each was placed half an ounce of cane-sugar syrup mixed with a little yeast. One was filled with water; the other with water containing 1 in 1000 of pure terebene; and both were inverted in shallow dishes containing water, and placed in a warm chamber. The bottles were observed day by day for six days, and the carbonic acid gas was found to accumulate twice as quickly in the former as in the latter. On another occasion two specimens were treated in a similar manner, and at the expiration of fifty-one hours both were examined microscopically. There was not much difference in the character of the torulæ, but those in the bottle containing terebene were less developed.

Pure terebene undoubtedly exerts an influence on lactic acid fermentation. Two beakers were taken, each containing two hundred and fifty cubic centimetres of fresh milk. To one of them was added five cubic centimetres of pure terebene, and both were placed in the warm chamber, at a temperature of 42° C. (107.6° Fahr.). At the expiration of twenty hours they were examined. The milk in one was found to be curdled, and strongly acid. That in the beaker containing terebene had a slight film on the surface, but was quite fresh, and was neutral in reaction. It was sweet and pleasant to the taste, except for the smell of pure terebene. The greater part of the pure terebene was found floating at the top. Twenty-three hours later this milk was curdled, and had a strong acid reaction.

Dr. Murrell stated that these observations were made in the Physiological Laboratory of the Westminster Hospital, in December, 1880, and led to a trial of the drug in cases of irregular fermentation in the stomach,—acidity, flatulence, etc.; and its subsequent introduction as a remedy for winter-cough.—*Brit. Med. Journ.*, July 24, 1886.

THE ALKALOIDS OF JABORANDI-LEAVES.

PROF. HARNACK, of Halle, and H. MEYER, in some previous publication (*Annalen der Chemie*, vol. cciv., p. 67), pointed out that pilocarpine could easily be changed into jaborine, a substance acting like atropine, and

Merck even claimed that jaborine was always present in minute quantities in the commercial pilocarpine. And still another alkaloid besides pilocarpine and jaborine has recently been obtained by Meyer, which he termed pilocarpidine, and described in the *Archiv für experimentelle Pathologie*, 1886, vol. xx., Nos. 5, 6. Omitting the chemical properties of the new alkaloid, which approximate those of pilocarpine closely, we beg to briefly review its principal physiological features.

The action of pilocarpidine is essentially identical with that of pilocarpine, only less pronounced. In a cat 7 weeks old which received 0.01 grm. of pilocarpidine hypodermically the drug induced a state of intoxication, which would have been fatal unless speedily counteracted by atropine. Among the more prominent symptoms of the poisoning by pilocarpidine Meyer mentions increased perspiration and lachrymation, besides diarrhoea, vomiting, and dyspnoea. In rabbits pilocarpidine causes likewise salivation and diarrhoea, but does not, even in doses of 0.2 grm. (3 grains), susceptible influence the respiratory and cardiac functions. While 0.1 grm. of pilocarpine (1½ grains) produces in a rabbit a profound intoxication and death, Meyer observed, after the subcutaneous employment of 0.5 grm. (7 grains) of pilocarpidine, no materially morbid symptoms; even 0.3 grm. (4½ grains) introduced directly into the circulation caused no intoxication. It is probable that the innocuousness of the drug results from its rapid decomposition in the animal organism. In frogs pilocarpidine showed likewise a much weaker action than pilocarpine. Jaboridine (an alkaloid into which pilocarpidine is easily changed) has hitherto, by Meyer, been tested exclusively on the frog's heart, and was found to closely resemble in its physiological properties those of jaborine and atropine, as intimated above.

THE ALTERNATIVES OF CRANIOTOMY.

At the meeting of the British Medical Association, recently held at Brighton, England, DR. BARNES read a paper with the above title before the Obstetrical Section, of which the following is a summary (*Lancet*, August 14, 1886):

1. The legitimate aspiration and the tendency of science is to eliminate craniotomy on the living and viable child from obstetric

practice. 2. The advance of hygienic rule, the improvements, the forceps, in turning, in the induction of labor, and in obstetrics generally, have materially curtailed the field within which craniotomy can be justifiably applied. The extension of the axis-traction curve to the forceps will, he believes, still further curtail the resort to craniotomy. 3. In the most extreme degrees of pelvic distortion, where delivery *per vias naturales* can only be effected by the best appliances and the highest skill, and with appreciable risk to the mother, Porro's operation is the legitimate alternative for craniotomy, if the opportunity of inducing abortion be gone by. 4. In less advanced degrees of pelvic contraction, but still incompatible with the delivery of a living child *per vias naturales*, the opportunity of inducing abortion having gone by, the Cæsarean section may be a legitimate alternative of craniotomy. This is the most debatable point. 5. In the minor degrees of contraction, say from three inches to three and a half inches, the opportunity for inducing premature labor having gone by, the far greater safety to the mother obtained by craniotomy makes this the proper course to adopt; at least, until it can be shown that the Cæsarean section is so improved as to be equally safe to the mother. The mother's right to be rescued stands before that of the child. 6. In other emergencies than deformity, as in obstructed labor from ovarian tumors, the alternative to craniotomy, if possible, is to remove the tumor. 7. In cases of immovable tumors, Porro's operation is the proper alternative. 8. In ruptures of the uterus, the child being delivered or not, Porro's operation is the proper alternative. The interests of mother and child coincide. 9. In cases of disease or tumors of the uterus, Porro's operation will generally be the proper alternative. 10. In atresia of the cervix or vagina, craniotomy or Cæsarean section may be necessary, but incisions and dilatation may more frequently be the proper alternative. 11. When obstruction is due to hydrocephalus, or dropsy in the child, embryotomy or tapping is indicated. 12. When the child is dead, embryotomy is indicated, and decollation when turning is hazardous from impactions of the child. 13. In convulsions and hemorrhages, the proper alternatives for craniotomy are found in the more scientific methods of concluding labors under these complications. Lastly. But the dream of Tyler Smith, the abolition of craniotomy, will be fully realized only when hygiene shall have triumphed over disease and deformity.

NEW FACTS ABOUT COCAINE.

DUJARDIN-BEAUMETZ communicates to the *Bull. de Thérap.*, vol. cix., No. 12, p. 529, a number of interesting data concerning cocaine, partly of an historical and partly of a therapeutic character, which we will present to our readers *en résumé*.

According to our author the anæsthetic action of cocaine has been called attention to as early as 1868 by Moreno y Meris (*Sur la Cocaine, Thèse de Paris*, 1868), and its analgesic virtues have been utilized in affections of the pharynx and larynx as early as 1877 by Saglia, Cazal, and Gougenheim, as can be seen from the *Bulletin de Thérapeutique*, 1882, p. 53. It is probable, however, that not the alkaloid cocaine, but the coca-leaves, or an extract prepared from them, was used by these physicians.

Cocaine appears to have an action just opposite to that of curare, and applied locally anæsthetizes not only mucous membranes, but also the skin. If 0.02 grm. ($\frac{1}{50}$ grain) of a two per cent. solution of cocaine is injected into the forearm, the skin loses its susceptibility over the point of injection and neighboring area for at least twenty to thirty minutes. Still, such injections are mostly attended by constitutional disturbances of no light nature. Drs. Bardet and Meyer, assistants of Dujardin-Beaumetz, anæsthetizing for the sake of an experiment their own skin, observed on themselves half an hour after the injection a considerable dilatation of the pupils and comatose symptoms. One of them fell in a state of vertigo, marked by pallor of the face and extreme weakness of cardiac action. These symptoms, moreover, recurred at every attempt to leave the horizontal position. In patients, Dujardin-Beaumetz observed analogous phenomena. A woman who, for the purpose of a painless dilatation of the anus, had received a hypodermic injection of cocaine into the perineum, was seized by vertigo, nausea, and a cramp-like working of the nostrils. Another patient experienced similar sensations, and in addition to them a feeling of growing lighter and flying away. All these evidences of intoxication had resulted after hypodermic doses of 0.01 to 0.02 grm. ($\frac{1}{50}$ to $\frac{1}{25}$ grain), doses which had been never exceeded. The fact that the stated symptoms occurred only in the erect position seems to suggest their relation to a state of cerebral anæmia caused by cocaine, an assumption which is strengthened by the observation that the mentioned phenomena did not occur in robust persons, and

were singularly pronounced in anæmic individuals.

According to the testimony of Grasset and Nègre, cocaine causes in animals cramps of a clonic nature. In monkeys 0.06 grm. (1 grain) were required to obtain this effect. The influence of the drug upon the animal temperature is manifest, though different according to the species of animals experimented upon. In a dog the temperature is raised, in the monkey lowered. Applied to the exposed blood-vessels of a frog, cocaine produces at first a distinct dilatation, and later a strong contraction, as observed by Rigolet, with a one per cent. solution. To obtain direct evidences of poisoning somewhat larger doses are required. Rigolet gave to a dog weighing eighteen kilogrammes 0.43 grms. (6 grains) of hydrochlorate of cocaine by intravenous injection without any detriment, and Bignon (of Lima) has figured out that the Indians take with impunity as much as 0.4 grm. (6 grains) of cocaine by the chewing of coca-leaves.

According to this observer cocaine is also soluble in vaseline, though he never saw any anæsthetic effects resulting from the rubbing in of this vaseline or of other solutions of cocaine into the skin, provided the epidermis was intact. To obtain anæsthesia cocaine is to be applied upon the denuded cutis or subcutaneously. In the former application the action of cocaine is very prompt, and can be advantageously employed to obviate the intense pains following upon severe burns and other accidents. Dujardin-Beaumetz recommends the exhibition of cocaine subcutaneously in all those cases in which a painful operative section of the cutis is necessitated. He has successfully resorted to the cocaine injection in cases of pleurotomy, in the opening of abscesses, tracheotomy, and the extirpation of a lupous neoplasm. It is best to inject about ten minutes previous to the operation, the patient being in a horizontal position. In operations for phimosis the cocaine injections are contraindicated on account of the resulting œdema.

Locally, solutions of cocaine are to be warmly recommended in almost all painful affections of the larynx and pharynx, in tubercular subjects a few minutes before meals to facilitate the often painful swallowing, before introduction of the œsophageal bougie to check the attempts at vomiting, and finally interstitial injections in the anal region for a painless dilatation of the sphincter. Likewise are the suppositories of cocaine indicated in

painful hemorrhoids and in vaginismus. Dujardin-Beaumetz has also employed cocaine internally, and pronounces its analgesic virtues in all painful and cramp-like conditions of the stomach truly marvellous, far surpassing the services rendered by opium.

In this connection our readers will recall that cocaine has also been recommended in singultus (by Compardon) and in whooping-cough (by Prior), but that Henoch never saw any beneficial results of its application in the latter affection.

THE TREATMENT OF NEPHRITIS.

According to the Paris correspondent of the *Lancet* (July 24, 1886), it is admitted in practice that nephritis in patients suffering from scarlet fever is not always in relation to the gravity of the eruptive disease. Prof. Jaccoud, following the example of Dr. Musatti, who established the fact that milk diet, instituted at the commencement of the malady, is the best remedy to prevent renal complications, employed the same treatment with great success. According to certain authors, renal albuminuria resulting from scarlet fever is very prevalent in some epidemics, and the number of cases so affected has been known to mount up to fifty per cent.,—that is, including both slight and grave cases; but Prof. Jaccoud, since adopting this method, has never had a single case of renal albuminuria. According to him, the real prophylactic treatment of this complication consists in the administration of milk from the first day of the malady, without waiting for the appearance of albumen in the urine. Milk alone should be given, both as food and medicine,—three litres per day if possible. Dr. Musatti condemns the use of the cold bath in scarlet fever, not only on account of the difficulties attending this mode of treatment, but also from the collapse and other complications that may be produced.

ANÆSTHESIA IN CONFINEMENT.

The questions whether or not anæsthesia is a desirable adjuvant of parturition, and what anæsthetics can claim the preference, will apparently never disappear from the store of professional discussions. Seemingly answered, settled and done away with, the subject is certain to loom up again after definite intervals.

In the Berlin gynæcological clinics (under

the superintendence of Schröder), Dr. E. Cohn instituted recently comparative trials with various anæsthetic agents, the result of which we find represented in *Schmidt's Jahrbücher* of June 1, 1886, p. 48. In Berlin the chloroform narcosis is the usual one, hence it was deemed only requisite to try monoxide of nitrogen and bromide of ethyl. We condense here the main conclusions arrived at by the experimenter.

The monoxide of nitrogen was mixed with oxygen in a proportion of two hundred volumes of the former to fifty volumes of the latter, and was administered from a gasometer through a mouth-piece covering the mouth and nose closely. Cohn could verify in general Döderlein's observations made with this gaseous mixture in labor, as set forth in the *Archiv für Gynæcology*, vol. xvii., No. 1. The heart was not influenced in any way by this gas, while the frequency of the respiratory act was distinctly raised by it, an observation directly opposed to that of Döderlein. A state of actual excitation was observed only in three cases out of twenty. Usually the confined women grew quiet after a few inhalations of the gas, answered correctly to all questions, and were well able to strain without having the consciousness of pain. On awaking after removal of the mask, the women never knew what had happened to them. In spite of the on the whole favorable results obtained with this anæsthetic, Cohn hesitates to recommend it for gynæcological practice on account of its being too unhandy to use, and besides of being too expensive, a single narcosis costing ten to twelve marks (two and a half to three dollars).

Cohn also took pains to ascertain the merits of bromide of ethyl, recommended three years ago for gynæcological purposes by Häckermann. According to Cohn's testimony, this anæsthetic does not unfavorably influence the straining process, removes pain, and leaves circulation and respiration wholly intact. There is one inconvenience, however, connected with this gas, viz., its garlic odor, which, after the elimination of the gas from the lungs of the woman, grows a source of discomfort to herself, her attendants, and possibly also to the child.

As to chloroform, it is well known that this gas exerts also a decidedly favorable impress upon parturition, removing the sensation of pain without lessening the straining power of the woman, provided no complete anæsthesia is induced. Chloroform has besides never been known to have produced any detri-

mental after-effects to the confined woman. Asphyctic conditions are exceedingly rare, provided the drug used be pure and no cardiac or pneumonic trouble present in the woman. The only objectionable feature in chloroform is that its action, especially in a prolonged narcosis, also affects the child. But as a prolonged narcosis is rather an exceptional requisite in confinement, the intimated objection of this anæsthetic is of little consideration. The general conclusion arrived at by Cohn from his comparative trials with various anæsthetic agents in confinement is that chloroform is the most eligible drug, and bromide of ethyl a valuable substitute for it.

EARLY OPERATIVE TREATMENT OF MORBUS COXÆ.

The April Bulletin of the Royal Academy of Medicine of Rome reports the presentation, by Dr. P. Postemski, of three boys with hip-disease. Two cases had been treated by the expectant method,—counter-irritation and extension, douching and immobility. Abscesses and sinuses formed, and recovery, with considerable deformity, only occurred after the treatment had been persisted in,—in one case for two, in the other for four years. In the third case early excision of the head of the femur was followed by rapid recovery. The operation was performed through a semi-lunar incision behind the great trochanter. The joint contained purulent serum, and was the seat of fungus synovitis. Only a few erosions were visible on the head of the bone. After removing it, the neck of the femur was rounded and refitted into the acetabulum, previously cleaned out by scraping. Drainage, union by interrupted suture, extension, and sublimate dressings were not disturbed for twenty-nine days, when union by first intention was ascertained. All the dressings were removed on the thirty-fifth day. At the end of eight weeks the patient was able to walk on crutches, and he could dispense with them when presented to the Academy. The case is unquestionably one of deep interest, but its progress at a later stage must be noted before a correct judgment can be formed. Assuming the issue to be entirely favorable, the advice to excise the head of the bone in the early stage of hip-disease raises grave questions. Granted that the danger of the operation is much less in children than in adults, and that the proportion of recoveries is largest when excision is practised before the joint is completely disorganized, two

results of experience are specially noteworthy. A large proportion of hip-joint patients do well under appropriate constitutional and local treatment; and excision of the hip is an operation involving risk to life, without the certainty of a strong and useful limb.—*Lancet*, July 24, 1886.

NEURALGIA OF THE PUDIC NERVE.

PROFESSOR ADAMKIEWICZ mentions in the Polish journal *Medycyna* a somewhat rare case of neuralgia affecting the pudic nerve. The neuralgias of the ovary and uterus in women and of the seminal ducts in men are, he says, usually described as neuralgiæ pudendo-hæmorrhoidales, but they have not been well worked out. The present case is interesting because the nerve affected arises from the pelvic plexus. Three years ago the patient began to suffer two months after her second confinement with painful spasm of the urethra whenever she attempted to micturate; sometimes, indeed, this spasm prevented her from voiding her urine. Afterwards the pain spread to the vesical region and became more and more frequent, so that at last the woman was scarcely ever free from it. Every movement of the body and any irritation or excitement increased it, and induced a desire to micturate. Morphine and absolute rest in bed produced some alleviation only. A painful spot was found where the gluteus maximus crosses the tuberosity of the ischium, and another on the inner surface of the ascending ramus of the ischium. The treatment adopted was electrical, the anode of a constant current battery being placed between the tuberosity and the spine of the ischium, and the cathode on the sacrum. After daily applications of a few minutes' duration for three months the patient was completely cured.—*Lancet*, July 24, 1886.

Correspondence.

PROPRIETARY MEDICINES.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have a few words to say about proprietary medicines, a question of vital importance to every physician,—a question which has already been discussed in the GAZETTE from the ethical and legal point of view, but whose business relation with physicians, the question of dollars and cents, does not seem to have been appreciated. For the

last ten to twenty years the whole horde of so-called manufacturing chemists and pharmacists have been putting upon the markets various sorts of proprietary nostrums. At first there were many of us that looked upon it as a commendable business, but now there are many of us who can plainly see that, from a business point of view, it is the worst enemy that the profession has to contend with. When these remedies were first originated the owners or proprietors depended upon the profession to introduce them, or at least they pretended so to do. But they were not satisfied with the legitimate demand that was thus produced, but then commenced advertising in the daily and weekly press, and thus brought themselves down to the position occupied by such men as vendors of "cure-alls." You can scarcely pick up a paper to-day without the first thing you see is *Tongaline*, or some other similar substance, in blazing type, lauded to the skies as a positive cure of about all the diseases known of nervous origin. You see attached the testimonials of popes, clergymen, and bishops, and you usually find the regulation lie attached,—i.e., that the poor unfortunate had been the rounds of all the doctors, and had no benefit until he got *Tongaline*, etc. Now I don't hesitate to say that the companies that manufacture and advertise such trash are working against the physician direct, and also that they are not honest, and their remedies should be boycotted by the profession. The remedy mentioned is illustrative of a great many others on the market equally objectionable.

I think it is time that the profession was roused upon this question. We must protect ourselves, or sooner or later the load will be too heavy for us to stand up under. There is no doubt in the world but what the science of medicine is making gigantic strides, as far as the acquisition of knowledge is concerned; but, on the other hand, contrary to justice and right, our worth and benefit to society is not acknowledged by the masses as it should be, and I lay the blame at the door of these quack nostrums, whose advertisements are to be seen in almost every paper. Coming out in plain words, and giving the therapy of their remedies, telling the names of the diseases for which they are to be used, thus placing the remedies directly in the hands of the laity.

It is a fact that the larger per cent. of the cases we are called to see nowadays here in this country are critical cases, made so by the patient depending on these proprietary reme-

dies and simply sending for the doctor as a last resort. You take the ordinary physician, and the practice that he desires most is just the kind that is taken away from him by these quack nostrums. For my part I am getting tired of it, and I want the agitation of this question to commence and be kept up until something is accomplished.

I have nothing to say against a remedy whose correct formula is on each bottle; this plan will insure a pure and cheap article, since with the removal of secrecy the incentive to fraud is removed. We have to go to work and sustain ourselves. We have the intelligence, the influence, and the right on our side, and we cannot afford to ignore this question. If we do not defend ourselves the proprietary medicine-man and druggist will completely do away with our business. Why here last year I told a druggist to get some bromo-caffeine, which I prescribed for a lady's headache; it cured her and I got fifty cents for the prescription. Since that time the remedy has been sold indiscriminately by the druggist. He has even sold it in the original package without destroying the label, and it is nothing for the people to go to the druggist first when they want medicine. Bromo-caffeine is all right, but it was a decidedly losing investment for me when I ordered it. Now let all physicians who have their best interests at heart join in and use their influence against any manufacturer who stoops to quackery and charlatanism by advertising his or their remedies outside of proper channels, or who keeps secret the formula. Never prescribe any nostrum whose label does not contain the correct working formula. We can influence legislation, we can work among our patrons, and in our daily intercourse with men we can start the ball rolling; in fact, we can in the next ten years make ourselves heard and felt all over the land.

Yours respectfully,

J. Z. SCOTT, M.D.

SCANDIA, KANSAS, July 16, 1886.

TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have read with more than ordinary interest the reports from different sources on ivy-poisoning. Not only for information gained, but from the fact that I have had my share in the experimental treatment of the trouble.

As has been stated, cases would present themselves so badly poisoned as to make the

features entirely beyond recognition, and often the whole body the same way, with all the accompanying discomforts. I tried the whole list of prescribed remedies with but partial or no relief.

One day a patient came in suffering terribly on whom I had been experimenting, saying I must certainly do something for his relief, as he could stand it no longer. There was a bottle of bromine on my table that I had been using as caustic. I determined to try a mild preparation of it in this case, as it might by its caustic action neutralize the poison. So I fixed up the following, with the result that in two days he was perfectly comfortable:

R Bromine, grs. xxx;
Vaseline, ℥iii;
Glycerin, ℥ii;
Cologne, q.s. to scent. M.

S.—Apply morning, noon, and night, first washing the poisoned part with salt water. Let the ointment remain one-half to one hour, then wash off with any fine soap.

I have used this time and again since, and no difference how bad the poison, always with the same result. It always stopped the trouble in two to four days.

J. W. LILLY, M.D.

TOLEDO, OHIO, August 21, 1886.

TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the July number of the GAZETTE I note the inquiry of L. B. Parsell, M.D., of Closter, N. Y., relative to the treatment of ivy-poisoning. Having had a number of cases this present year, I found in seventeen cases that the following prescription acted almost as a specific, cutting short the spread of the poison and allaying the intense itching:

R Plumbi acetat., ℥ii;
Bromo-chloral, ℥i;
Aqua pura, q.s. ℥iv. M.

S.—Shake well, and apply three or four times a day, first washing parts well with warm water and Castile soap. The strength can be varied according to age of person and severity of poison.

Would be glad to hear through medium of GAZETTE the results of the same.

Respectfully,

M. A. HOOVER, M.D.

KEARNEY, NEB., August 19, 1886.

COCAINE IN DYSENTERY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the GAZETTE of July 15, Dr. R. L. Hinton gives his experience in the

use of cocaine, and calls the attention of the profession to its value in dysentery.

The *New York Medical Journal*, of April 24, 1886, contains the proceedings of the Clinical Society, of January 22, 1886, at which meeting I reported the good results I had had in dysentery treated by cocaine.

The *New York Medical Record*, of December 5, 1885, and February 20, 1886, gives short notices on the same subject.

In my lectures to the students of the Medical Department of the New York University, at the opening of the session of '85-'86, I taught the application of this new and important therapeutic agent in dysentery.

Yours respectfully,

JOSEPH E. WINTERS.

36 W. 32D ST., NEW YORK, August 3, 1886.

TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—On page 491 of the July number of THERAPEUTIC GAZETTE, Dr. L. B. Parsell, of Closter, N. Y., asks for a remedy that will cure the poison of rhus toxicodendron, to which I would like to reply through the columns of your valuable journal, not only for his benefit but for that of all others, by referring him to page 286, August number of THERAPEUTIC GAZETTE, 1882, where I have already answered this question. I have never, for about twenty-five years, prescribed anything for this rash except the cold infusion of red sassafras-root applied by wet cloths and the drinking three times a day, or *ad libitum*, the warm tea of the same. Never failed to cure the most aggravated cases in one to three days, without a single exception, and I have had cases come to me that had baffled other physicians. This is a simple remedy, cheap, and pleasant to the patient, and I wish every physician who has a case of this rash, and can procure the fresh root, would give it a trial.

R. L. HINTON, M.D.

PRESCOTT, ARK., NEVADA Co., August 4, 1886.

TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your July number, Dr. Parsell asks for a remedy for the poison of ivy. In addition to the prescriptions from the *Journal of Cutaneous and Venereal Diseases*, which you quote, I would suggest a trial of *menthol*, a solution in ether or alcohol of one drachm to the ounce. Although I

have not used this drug in this particular affection, my experience with it in erythemas due to other causes has been so favorable that it would seem to merit trial in this (see page 51 of the current volume of the GAZETTE). And if Dr. Parsell would be kind enough, I would be glad to see his report in some future number of your journal.

Very truly yours,

SELWYN A. RUSSELL, M.D.

135 N. PEARL ST., ALBANY, N. Y.

THE TREATMENT OF IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I see in the July number of the GAZETTE an inquiry made by L. B. Parsell, M.D., of Closter, N. Y., asking for "a remedy for the poison of wild ivy."

I have been engaged in the practice of medicine in the West since 1852, and have treated a large number of cases of ivy-poisoning with satisfactory results, and I think the following formula will prove very nearly a "specific":

R Solanum dulc. (bittersweet), bark of root, \mathfrak{z} i;
Sambucus (elder), inner bark,
Lobelia inf. (herb), \mathfrak{aa} \mathfrak{z} i;
Lard (or vaseline), \mathfrak{z} iv. M.

Simmer over a slow fire for four hours. Strain, and apply freely to the parts affected.

If the case is a bad one, saturate a thin cloth with the salve, and keep the affected parts wholly covered with the cloth.

Yours,

B. C. PARKER, M.D.

WILBER, NEB., August 4, 1886.

TEST FOR NITRITES IN WATER.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In a recent number of the THERAPEUTIC GAZETTE there is a reference made to a test for nitrites in water.

In the description given naphthylamine hydrochloride is mentioned, but there has accidentally been omitted the sulphanilic acid, which is also necessary.

This has probably arisen from its having been mistaken for sulphuric acid, which is also required.

The test is usually performed by adding to the water a solution of sulphanilic acid, then pure sulphuric acid, then a solution of naphthylamine hydrochloride.

Since without the first-mentioned body the

red color of the nitrites does not appear, a serious error might be occasioned.

It would be well, therefore, in the next number of the journal to call attention to this omission.

Yours,

HENRY LEFFMANN, M.D.

PHILADELPHIA, PA., August 6, 1886.

Notes and Queries.

WAS IT LEAD PARALYSIS?

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—July 15, C., aged 60, good family history, never sick, addicted to the use of alcoholic stimulants, came to me with wrist-drop paralysis of the extensors of carpus and phalanges of the right hand. The night previous he had gone to bed feeling well, but on arising in the morning he found his hand in the above-described condition.

I questioned him closely, but could find no symptoms of lead colic. Bowels were regular; no pain; appetite good; no metallic taste in mouth; the gums showed no appearance of a blue line.

The only thing that I had on which to base my diagnosis was that he was in the habit of carrying lead seals for freight-cars in his mouth from one car to the other. He had been doing this a number of years. I did not begin treatment for a week, at his request, he thinking it was only a sprain.

I then began the use of the interrupted galvanic current daily, giving strychnine and iodide of potassium internally. In four weeks he was completely cured, and now he says his hand is as good as ever.

The question is, If this was not lead paralysis, as I diagnosed it, what was it?

I would be pleased to hear from some of the many readers of the GAZETTE about this.

J. S. APPLEMAN, M.D.

STRYKER, OHIO.

HOPEINE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—You seem to be in considerable doubt about the composition and properties of "hopeine." A judicial decision from this State will settle the matter for you, for, as far as my recollection serves me, about the time of the Centennial the Eastern article was identical, only a little inferior, to the Western.

Under the new prohibition law of Iowa no alcoholic drinks are vended. Hopeine is extensively sold. HOPEINE is on many a sign where saloons were wont to be kept. One of these places was arraigned for illegal selling. Several witnesses were called who affirmed, under oath, that they had partaken of hopeine and nothing else. The case rested. "Do you know," said the judge, to one of the witnesses, "the difference between beer and whiskey when you taste it?" The witness said he did. "Now," said the judge, "you will tell the jury whether hopeine that you drank was beer or whiskey, and you will be committed to jail for contempt until you answer the question." "It was *beer*," said the witness. F.

• CLINTON, IOWA, July 24, 1886.

[At last we know what hopeine is. It is not the alkaloid of American hops; it is not morphine, cocaine, or atropine. It is beer.—EDS.]

PRECAUTIONS AGAINST CHOLERA.

In view of the terrible ravages of Asiatic or epidemic cholera in Europe during the past eighteen months, in which time it has numbered its victims by tens of thousands, and of the fact that it is constantly invading new regions on that continent, showing an especial preference for the shores of the Mediterranean, with which our country has extensive and intimate commercial relations, the State Board of Health of Pennsylvania has deemed it wise to issue a few concise rules, the observance of which will tend to check its spread should it reach our shores. That it has not done so already is not due to any change in the epidemic character of the disease, but simply to the fact that the United States Government has at length awakened to a sense of its responsibilities as the guardian of the health of its citizens, and adopted wiser and more stringent measures than ever before to prevent the scourge from starting on its voyage of destruction. It is too much to hope, however, that it can be entirely shut out, with the limited appliances at present at the command of our authorities. Let not the fact that the warm season is over engender a false sense of security. In one of our recent epidemics the first cases appeared in the month of December, and, with the favoring conditions of the following summer, the pestilence burst forth. It is the part of wise generalship "in time of peace" to "prepare for war," and not wait until the foe is upon us, and mad panic sunders all

ties and paralyzes all resistance. The Board, therefore, suggests as of the utmost importance the following

PREVENTIVE PRECAUTIONS.

Filth is the home, nest, and breeding-place of cholera. The removal of filth beforehand is of infinitely more use than its attempted disinfection after the epidemic has begun. To this end it is essential :

1. To examine the condition of all public water-supplies, and, if pollution is discovered, to cut off its source.
2. To examine the surroundings of all private wells with reference to the existence of causes of pollution.
3. To remove all house refuse, offal, and garbage from the neighborhood of habitations, and either bury or burn it.
4. To use copperas, dry or in solution (a pound to the gallon of water), in all places which are in the least offensive.
5. To examine thoroughly all house-plumbing and drainage, and remedy defects.
6. To thoroughly and frequently cleanse all cellars, out-houses, stables, and hog-styes, using whitewash freely.
7. To drain all wet places in the immediate neighborhood of dwellings; and to drain, ventilate, and, if necessary, cement damp cellars.

The organization of local boards of health in every city, borough, and township in the Commonwealth during the coming winter is of the utmost importance to aid in carrying out these suggestions, and local boards already in existence should act with energy and despatch. Should our quarantine authorities, national and municipal, who are, hourly, on the alert to prevent the introduction of this particular disease, be successful in their benevolent, devoted, and patriotic efforts, it will be a satisfaction to know that no pains taken, no labor expended, no expense incurred in improving the sanitary condition of our towns and our homes, will have been wasted. These measures must inevitably result in diminishing the prevalence of other diseases which we have always with us, and which, in the long run, therefore, carry off more victims than cholera in its comparatively short, though terrible, stay. Should it make its appearance, after we have thus put our habitations and surroundings into the complete state of preparation above recommended, we may view it with comparative indifference. It will not be wise, however, in its presence to neglect certain

PROTECTIVE PRECAUTIONS.

The cholera poison, whatever it be, is taken into the system through the mouth,—that is, IN FOOD OR DRINK. Simply being near a cholera patient cannot give you the disease. Therefore, have no fear of visiting a cholera-infected house on an errand of necessity or of mercy, or even of nursing a cholera-stricken relative or friend. Still further, there is strong ground for believing that the natural juices of a healthy stomach will destroy the vitality of this poison. In Europe last year the greatest number of new cases were usually reported on Monday mornings, Sunday being the day for dissipation among the working classes, and thus leaving them with disordered stomachs, incapable of destroying the activity of the virus before it reached the bowels, where alone it has the power of doing injury. It is, therefore, of the utmost importance to preserve a vigorous digestion by observing a few simple PERSONAL PRECAUTIONS: (1) Avoid all excesses in food or drink, and especially in alcoholic drinks. (2) Take your meals at regular intervals, and do not go into an infected house on an empty stomach. (3) Avoid all intense excitement, violent exercise, colds from undue exposure, and the immoderate use of ice-water. (4) Do not restrict the range of your diet suddenly or exceedingly. (5) Keep the skin in active condition by frequent bathing of the whole body with tepid water, and never eat without first washing the hands carefully. Cholera rarely attacks those who lead healthy, cleanly lives. Its victims are usually found among the dissipated, the careless, and the dirty.

While thus placing your body in a thoroughly defensive condition, do not overlook the importance of PRECAUTIONS IN REGARD TO FOOD: (1) Look upon unripe or over-ripe fruit or vegetables as so much poison, and do not allow your children to have pennies to buy the half-decayed fruit offered for sale on the street-stands. (2) It has been abundantly proved that heat destroys the potency of the cholera poison. Therefore, use no water for drinking, or for washing cooking and table utensils, which has not been thoroughly boiled. You will also err on the side of safety if you eat no uncooked fruit or vegetables. (3) Milk is especially liable to convey infection, and should, therefore, always be boiled. (4) If you use a filter, see that your water-cooler is rinsed carefully every day, and that the filtering material is frequently washed or changed.

(5) As sulphuric acid has been proven to possess the power of destroying the infectious material of cholera, if there is the slightest reason to suppose that the water is polluted, use the additional precaution of adding a tablespoonful of dilute sulphuric acid to every gallon of drinking water. This quantity will not render the water unpalatable. A little sugar may be added, however, if the acid is distasteful. In case of diarrhoea coming on, this acid mixture may be taken of six times the above strength, and frequently repeated in small doses until a physician can be summoned, which should always be done immediately, if the epidemic is a virulent one, the patient meanwhile remaining on his back. (6) As the infection may be carried in clothing, do not send your own to public laundries. That of cholera patients may be washed in the same water, and the disease may thus be brought back to your own house.

Should a member of your family be attacked with the disease, keep the patient in the house, as removal might be fatal, and send away the well members as far as practicable. Use the following

PRECAUTIONS IN THE SICK-ROOM.

(1) All carpets, curtains, and clothing not in use, contents of bureau-drawers and wardrobes, books, etc., should be removed from the sick-room at the earliest possible moment. The infection resides in the discharges of the patient, whether from the stomach or the bowels, but especially from the latter; therefore (2) All such discharges should be received in a vessel containing about a pint of disinfecting solution, thoroughly mixed, and allowed to stand fifteen minutes, if possible, before emptying. If in the country, they should then be buried at least eight inches under ground, and remote from any well or running stream. (3) Any clothing, bedding, towels, napkins, or handkerchiefs, soiled by a patient, should at once be immersed in a strong disinfecting solution, allowed to remain four hours, and then boiled or exposed to dry heat for four hours (230° Fahr.). (4) After the recovery or death of the patient, as much of such clothing as can be dispensed with should be burned. All utensils used by the patient should be placed at once in a disinfecting solution before being washed. (5) During convalescence all the discharges of the patient must be treated as if they were fresh cholera discharges. (6) The dead should be enveloped in a sheet saturated with a disinfecting solution without previous

washing of the body, and at once placed in a coffin. Burial should be immediate and private. The Board recommends the following

DISINFECTING SOLUTIONS,

principally suggested by the Committee on Disinfectants of the American Public Health Association:

For the Disinfection of the Discharges from the Patient.

1. *Standard Solution, No. 1.*—Dissolve chloride of lime or bleaching powder of the best quality (containing at least twenty-five per cent. of available chlorine) in soft water in the proportion of four ounces to the gallon.

2. *Standard Solution, No. 2.*—Dissolve corrosive sublimate and permanganate of potassium in soft water in the proportion of two drachms of each salt to the gallon.

(NOTE.—1. This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipes. 4. It is without odor.)

3. *Standard Solution, No. 3.*—To one part of Labarraque's Solution (*liquor sodæ chlorinata*—U. S. P.) of hypochlorite of sodium add five parts of soft water.

(NOTE.—Competent authority has pronounced this superior to all other disinfectants.)

For the Disinfection of Clothing, Towels, Bedding, and other Textile Fabrics.

Standard Solution, No. 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potassium to give color to the solution as a precaution against poisoning. One fluidounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours. One gallon of standard solution, No. 1, may also be mixed with nine gallons of water, and used in the same way. No article should be allowed to leave the infected room until it has been either disinfected or boiled.

(NOTE.—Corrosive sublimate solutions should be kept in wooden or crockery vessels.)

For the Disinfection of Water-Closets, Urinals, Sinks, and Cesspools.

4. *Carbolic Acid Solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution, No. 4, diluted with three parts of water, may also be used in the proportion of one gallon (of the solution) to every four (estimated) of the contents of the vault. Standard solution, No. 1, would require to be used gallon for gallon of the

material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution, No. 2, may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

For Disinfection of the Sick-Room after it is Vacated.

Thorough ventilation for several days, and thorough washing of all surfaces with one of the disinfecting solutions, say, one pint of standard solution, No 4, to four gallons of water, or a quarter of a pint of solution of hypochlorite of sodium to a gallon of water. The walls and ceiling, if plastered, may be washed with this, and then whitewashed. All dust must be carefully washed (not brushed or swept) away from ledges, cracks, corners, and crevices.

5. *Sulphuric Acid Solution.*—Sulphuric acid or oil of vitriol is often accessible when other disinfectants are not, and is very effective, in the proportion of one ounce to the gallon of water, for disinfecting cholera stuff (discharges); of the same strength for soiled clothing; and of half this strength for bathing the body of the sick or the hands of the attendants, or sponging the clothing of attendants and the floor and carpets, if they become soiled.

A CASE OF CYSTIC GOITRE TREATED BY "SHELLING OUT."

MR. WILLIAM DUFF reports the following case in the *Lancet* for July 3, 1886 :

Annie Z., aged 23, married, was admitted on July 23, 1885, suffering from a tumor on the right side of the neck. She had enjoyed good health until five years ago, shortly after marriage, when a swelling commenced to form over the right side of the thyroid gland, and continued slowly and persistently to enlarge. She had one child a year and a half ago, but neither pregnancy nor lactation seemed to influence the growth. On admission a tumor about the size of a cocoanut occupied the position of the right lobe of the thyroid gland, and passed somewhat over to the left of the middle line of the neck. The skin, with a few enlarged, subcutaneous veins, was freely movable over the swelling, which moved with the trachea in the act of swallowing. Fluctuation could be felt all over it, more distinct in some parts than others. Neither breathing nor swallowing was seriously interfered with. About three weeks before admission a teacupful of

bloody serous fluid was withdrawn by a trocar and canula, and the tumor was considerably reduced in size, but reaccumulation took place in a day or two. By August 11 the tumor had attained a larger size than ever, the circumference of the neck being seventeen and three-quarter inches. The patient was informed that if the tumor remained serious results might ensue, and she consented to an operation.

Ether having been administered, Dr. Vachell proceeded, on August 12, to remove the tumor under the carbolic spray. A vertical incision, measuring about two and one-half inches long, was made through the skin over the most prominent part, and at once the surface of the tumor came into view, the capsule of the gland, if present, having been so thinned by pressure as to present no difficulty. Up to this point very little hemorrhage had occurred. Without much difficulty the tumor was now shelled out, but the hemorrhage, which commenced with this process and continued throughout, was very profuse. Firm pressure was maintained by an assistant, the surface was mopped with very hot water mixed with tincture of iodine (1 in 20), and as bit by bit the surface was exposed all the bleeding points were ligatured. The edges were then brought together and a drainage-tube inserted.

After the operation the progress was satisfactory. Some sickness in the afternoon and a troublesome cough led to considerable oozing, necessitating the dressing of the wound in the evening. The dressing was repeated the next day. On the 14th the tube was shortened, and on the 16th the stitches were removed. On the 19th boric dressing was substituted, and on the 24th the patient left the infirmary.

The temperature rose on the evening of the day of the operation to 103.8°, and remained more or less febrile till the 19th. Probably this was due to an attack of bronchitis, from which she then suffered.

The tumor, which was irregularly ovoid in shape, measured thirteen inches by nine inches, and weighed twenty ounces. On being cut into, nine ounces of dark sanguineous fluid escaped, similar to what had been removed by tapping, but darker. The walls varied from one-sixth of an inch to rather over half an inch in thickness, and consisted of material resembling heart muscular fibre in naked-eye appearance. The internal surface was much and deeply corrugated.

ATROPINE-POISONING.

JULIUS KRATTER records in *Schmidt's Jahrbücher* of June 1, 1886, his observations made in eight cases of poisoning by atropine or belladonna treated in the hospital at Graz. The first case was a slight poisoning provoked by seven powders of 0.01 grm. ($\frac{1}{16}$ grain) of the extract of belladonna; the second, a grave intoxication caused by seven suppositories of 0.05 grm. (1 grain) of the same extract; the third, fourth, and fifth cases, all of which were likewise serious, were the result of eating the berries of belladonna by mistake. In the sixth case, an auto-intoxication by the berries of belladonna, maniacal phenomena presented themselves, followed by a profound coma, and death on the third day.

The clinical appearances deviated but little from the well-known group of symptoms of atropine-poisoning. In several cases the dilatation of the pupil was the first symptom observed. Kratter emphasizes the fact that in all these cases the temperature was distinctly elevated, though all text-books speak of a reduction of the temperature in atropine-poisoning. In a case observed by Fritz Strassmann, of Berlin, the temperature was likewise found to be raised. *Vide Schmidt's Jahrbücher, loco citato.*

ADMINISTRATION OF TEREbene.

The following formulæ for preparations of terebene are taken from the *Colonial Druggist* (reprinted in *Nat. Drugg.*), and will be found convenient to druggists, for they are usually applied to by the physicians for the proper combinations to administer new remedies (*American Druggist*, July, 1886):

Terebene is employed as a remedial agent not only in cases of "winter cough," phthisis, dyspepsia, etc., as related by Dr. Murrell, but also in various affections of the alimentary canal, in certain skin-diseases, and as a disinfectant; this has naturally created a considerable demand for this preparation.

The ordinary mode of taking terebene—"10 drops upon a lump of sugar"—has several disadvantages, not the least of which is that the sugar, if thoroughly impregnated with the hydrocarbon, is rendered—for some time at least—practically insoluble in water or saliva; it has, therefore, either to be crushed by the teeth and well masticated, or else retained in the mouth for an inconveniently long period. The linctus given below will be found far more convenient, as well as more palatable:

℞ Terebene, fʒv;
Powdered gum-arabic, fʒiv;
Syrup of tolu, fʒi;
Strained honey, fʒii;
Tincture of saffron, q.s.;
Water, q.s.

Mix intimately in a small mortar the terebene and the powdered gum; emulsify carefully with $1\frac{1}{2}$ ounces of the water, adding the syrup of tolu gradually towards the last. Stir in the honey until the whole has become smooth; make up to the measure of 6 fluid-ounces, and color with a few drops of the tincture of saffron. The dose is one teaspoonful. This linctus keeps well, and is generally appreciated, even by young children, while in a variety of throat affections it gives speedy relief, although free from narcotics; observations which also apply to

TEREBENE COUGH MIXTURE.

℞ Terebene, fʒi;
Powdered gum-arabic, ʒiv;
Powdered sugar, ʒiii (troy);
Yolk of eggs, 2;
Anise water, fʒii;
Camphor water, fʒiv;
Distilled water, q.s.

Mix the two powders in a mortar, and stir in the terebene. Emulsify with the yolk of eggs, and the aniseed and camphor waters previously well beat up together. When perfectly smooth, make up with water to the measure of 8 fluidounces. Dose: One teaspoonful as often as may be necessary. An acidulous modification is as follows:

℞ Terebene, fʒi;
Powdered gum-arabic, grs. xxx;
Powdered sugar, ʒi (troy);
Yolk of eggs, 2;
Syrup of lemon, fʒiii;
Water, q.s.

Proceed as previously directed, only emulsify with a very little plain water before adding successively the yolk of eggs and acid lemon syrup. If the eggs be not "new laid," it may be as well to beat up the yolks with about 20 or 30 minims of diluted phosphoric acid before stirring the same into the other ingredients, as before. Make up to 8 ounces. Both this and the preceding mixture may be tinted, if desired, with a little saffron or caramel.

This mixture should contain about 16 grains of citric acid to the fluidounce; therefore, if the lemon syrup used is not strong enough in this respect, a little powdered citric acid must be added to make up the deficiency.

PASTILLES OF TEREbene.

- R Terebene, 80 to 100 grms. (1 gr.=15 grs.);
 Gum-arabic, 400 grms.;
 Powdered tragacanth, 200 grms.;
 Powdered loaf-sugar, 500 grms.;
 Glycerin, 30 grms.;
 Oil of lemon, 12 grms.;
 Egg (white of), 5 or 6.

Dissolve the oil of lemon in the terebene, and add the mixture to all the powdered gums and 100 grammes of the sugar. When thoroughly incorporated, emulsify with the smallest convenient quantity of water, and add the glycerin and the egg albumen, the latter having been well whisked. Transfer to porcelain or enamelled iron vessel heated by a water-bath, and, when warm, slowly sift in the fine sugar as it dissolves in the viscous fluid. Stir constantly, and evaporate until a little dropped upon a cold plate becomes, after ten minutes, of a sufficiently firm consistency. Pour out to the depth of about half an inch upon cold tin or porcelain plates, which have first been dusted over with finely-sifted dry starch. When cool, divide the stiff, dough-like mass into squares or diamonds of suitable dimensions, using a mixture of one part white sugar and three parts starch, perfectly dry and in fine powder, to prevent sticking. A small sugar-sifter, or "dredger," will be needed during this operation. These pastilles may be safely given to the youngest children, and for persons of old age are very efficacious in dislodging both phlegm and flatus.

AROMATIC TEREbene FOR DISINFECTION.

- R Terebene, ȝii ;
 Eucalyptol, ȝiii ;
 Thymol, mxx . M.

Put up in "sprinkler" bottle, and impregnate small pads of cotton, wool, bran, "wads" of lint, blotting-paper, etc., and hang them about the apartment some two and a half to three feet from the ground, especially in such situations where a draught from door or window is likely to cause currents of air to pass over them occasionally.

AROMATIC TEREbene SPRAY.

The disinfecting mixture just mentioned, either by itself, or, preferably, dissolved in an equal bulk of strong alcohol, or Larbalestier's eau de cologne, is shaken up in an atomizer with ten parts of plain water. When "sprayed," a refreshing fragrance is imparted to the air, and septic fermentation cannot take place therein.

THE INFLUENCE OF GASTRO-INTESTINAL AFFECTIONS OF CHILDREN ON THEIR BODILY WEIGHT.

DR. NAKATSU MIYAMOTO (of Japan) communicates to the *Arch. f. Kinderheilkunde*, 1886, vol. vii., Nos. 3, 4, the results of his observations on the influence of gastro-intestinal troubles of children on their bodily weight. He examined for the purposes stated, dyspepsia, ten cases; intestinal catarrh, fifteen cases; enteritis follicularis, eight cases; cholera infantum, six cases. His conclusions are thus formulated: (1) dyspepsia invariably and manifestly decreases the weight, often causing a daily loss of thirty-three grammes (one ounce). (2) Intestinal catarrh has very similar consequences. (3) In enteritis the loss is far heavier, at times amounting to twenty ounces *pro die*. (4) Cholera infantum causes, of all stated affections, the greatest reduction in weight in the shortest time, amounting occasionally to a loss of one-tenth of the entire weight within twenty-four hours. These cases, of course, are all fatal.

REMARKABLE ACCIDENT WHILE TAPPING A HYDROCELE.

A rare and remarkable accident during the ordinary operation of tapping a hydrocele is reported from Bordeaux. The patient was a healthy peasant of 44 years of age, who had never suffered from any venereal affection. The hydrocele, which was on the right side, had been in existence some two years, and had followed an accidental blow. As it continued to increase in size, he sought advice, and was admitted into M. André Boursier's clinic. When the trocar was introduced, about one hundred and twenty-five grammes of straw-colored fluid came away. M. Loumeau, who performed the operation in M. Boursier's presence, then, having satisfied himself that the extremity of the canula was free in the cavity of the tunica vaginalis, proceeded to inject gently 60 grammes of a mixture of tincture of iodine with twice its volume of water. All at once the patient complained of severe pain in the cord and the loins, with cramp in the right forearm. The ulnar border of the right hand then became flexed, the ring and small fingers being completely flexed, while the index and middle fingers, though extended as far as the second and third phalanges were concerned, were flexed at their metacarpo-phalangeal articulations. The thumb also was flexed and brought near the fingers. Exactly the same position was shortly

afterwards assumed by the left hand. There were no convulsions or syncope. After a few minutes the "ulnar griffe" began to relax, and the index and middle fingers became flexed completely on the hand, which itself became strongly flexed on the forearm. All the muscles on the front of the forearm became hard and contracted. The palmar fascia was strongly retracted, and the palmaris brevis quite tense. On both sides the ulnar affection had given place to contraction of the muscles supplied by the median nerve. The patient was unable to articulate a sound, his tongue hanging loosely in the buccal cavity. The muscles supplied by the hypoglossal nerve were also contracted, but for a short time only. The forearms were shampooed, and after nearly an hour the muscles relaxed. The patient recovered completely, and left the hospital after a few days. M. Loumeau has been unable to find an example of this kind in medical literature; but M. Desplats, of Lille, published a paper on pleural eclampsia last year in the *Semaine Médicale*, in which he refers accidents connected with pleural operations to four categories: (1) toxic action of the liquid injected, (2) true epilepsy, (3) uræmia, (4) reflex action. The author surmises that the accident was due to reflex irritation of the nerves of the serous membrane by the liquid injected. The testicle, it may be remarked, was in no way injured. Whatever explanation may be offered, the fact remains, which is itself sufficiently extraordinary, of a healthy peasant man of middle age being thrown into a state of severe nervous spasm by the performance of a very simple and very common surgical proceeding.—*Lancet*, July 3, 1886.

TUBERCLE-BACILLI IN THE URINE.

DR. KIRSTEIN reports in the *Deutsche Med. Wochenschrift* (1886, vol. xii., No. 15, p. 249) the clinical history of a case of grave septic cystitis in which, by the discovery of tubercle-bacilli in the urine, he could diagnose the simultaneous existence of tuberculosis of the bladder. The copious sediment, consisting chiefly of septic and purulent matter, rendered the recognition of the bacilli of course extremely difficult. They could only be found in one out of forty sections. To facilitate the finding of the microbes, Kirstein proposes the following procedure: The sediment is transferred to a cup-shaped glass, well stirred with a glass rod and filtered; then the residue is

poured on a watch-glass, some of the matter crushed between two slides, and treated in accordance with Ehrlich's method. The result of this procedure was the finding of bacilli in each of the preparations thus obtained.

POISONED BY WILD FLOWERS.

About a fortnight since, a little girl, aged 7 years, died at Glasgow, as alleged, from having sucked the bloom of some poisonous wild flower. The child had been taken on a Sunday-school excursion into the country. During their ramblings wild flowers were gathered, and posies were arranged and garlands woven, as is the wont with children set free from the care and discipline of schools and allowed to roam fancy free in meadows and by hedge-rows. In their delight at nature's fairest gifts, little did the denizens of the big Scotch town dream of the poison that lurks within the spathe of the cuckoo-pint (*Arum maculatum*), or in the clusters of purple blossoms of the woody nightshade (*Solanum dulcamara*). In fact, the flower of this plant is so like in form and arrangement to that of its innocent first cousin, the esculent potato, that we can understand how a knowledge of the harmlessness of the culinary tuber may have suggested a riskless indulgence in the flowerets of the former. In these days of school-board exaction, is it too much to ask that our children should be instructed, if only in simple fashion, in the broad principles of botany and zoölogy, and taught how to recognize the plant that nourishes and the one that kills,—the harmless snake and the poisonous adder? It is not necessary to go into technical details and to use harsh scientific words to instil into a child's mind that which may be of good service to it when brought in contact with the floral beauties of spring and early summer, or with the berry clusters of a later season. What could be more interesting to a hard-worked, brain-wearied little wanderer in God's garden than to learn the way to recognize the difference between the garnishing parsley and its deadly relative whose name is the antithesis of him that is wise, or its still more poisonous effigy, the classic hemlock, growing in shady nooks? We might mention a hundred other instances,—e.g., the creeping hairy bryony, with its festooned wreaths of scarlet berries, hard by its rival, the common tamus, with leaves of shining green, growing bronzed and sombre as the autumn of its vegetative life approaches. We could tell that the simple

dropwort, or spiræa, has no right to have its title disputed by the water dropwort or the hemlock water dropwort, with which it holds no natural affinity. We could warn against the perfidy of the gaudy foxglove and the sedate but deadly nightshade, and so on ; but enough has been written to merit the sympathy of our Board of National Education, and to make them consider that the fields around us are the true fields of learning.—*Lancet*, June 26, 1886.

ON LESIONS OF THE CORNEA FOLLOWING THE INSTILLATION OF COCAINE.

Numerous instances have now been recorded in which the use of cocaine has been followed by local ill effects : these may be divided into two classes, namely, suppurative panophthalmitis and lesions of the cornea. The former being, in all probability, due to septic infection, cannot be said to depend directly upon the use of cocaine, except in so far as cocaine increases the absorbent properties of the cornea (a subject that will be considered presently), and direct inoculation occurs from impurities in the solution used.

The corneal lesions which have been observed are of two kinds : (1) an affection of the epithelial layer only, consisting of vesication or desquamation, and (2) interstitial opacities, often taking the form of a kind of striated keratitis extending from the wound.

One of the first to observe the superficial changes was Paul Bunge (*Klin. Monatsbl. für Augenheilk.*, 1885, p. 402), and very many instances have been recorded since. In some of these, the case has not been complicated by the employment of any antiseptic solution, a point which, as will presently be seen, is of considerable importance. There can, therefore, be no question that the vesication and desquamation which occasionally follow the use of cocaine are really due to the action of the drug.

With the view of ascertaining how cocaine produces this effect, Würdinger has recently conducted some experiments upon animals (chiefly rabbits, but also upon dogs and guinea-pigs) (*Klin. Monatsbl. für Augenheilk.*, April, 1886). In addition to the anæsthetic action of cocaine, one of its most marked effects is the dryness of the surface of the eye which it causes ; this is probably due chiefly to the anæmia of the conjunctiva and the diminution in the lachrymal secretion from constriction of the blood-vessels ; but it is probably increased by the wide opening of

the palpebral fissure that usually occurs, and the absence of the natural and involuntary blinking movements.

In order to ascertain how far the changes in the corneal epithelium were due to these causes, Würdinger instilled a drop of a five per cent. solution into both eyes of a rabbit, at intervals of four minutes. The one eye was kept closed between the instillation, but the other remained open.

In the closed eye, no changes whatever took place in the appearance of the cornea. In the other eye, after three or four minutes, slight changes were noticed ; these increased, and, in twenty to twenty-five minutes after the cocaine had been commenced, the cornea presented a superficial and fine roughness, as well as depressed areas, which looked as if they were caused by the shedding of the epithelium. After an hour, the turbidity of the cornea had increased so much that the condition of the iris could no longer be made out.

Further experiments showed that the intensity of the changes depended more upon the duration of the experiment than upon the concentration of the solution, or the frequency with which it was applied. By dropping distilled water upon the cornea, between the applications of the cocaine, changes which had already occurred were not removed, but their increase was prevented. Microscopic examination of the altered areas showed that the epithelium, where not removed, was thinned out, and that there was also considerable thinning of the anterior layers of the true corneal tissue.

As regards the interstitial opacities of the cornea, Dr. Wood-White (*Ophthalmic Rev.*, January, 1886, p. 6) appears to have been the first to suggest that they were due, not to the cocaine itself, but to the simultaneous employment of a solution of corrosive sublimate. He states that he has frequently used cocaine alone, and in conjunction with boracic acid, and has never seen any ill effects arising from it, but that in the only cases in which he at the same time used a solution of corrosive sublimate (five cases of cataract extraction), a pearly-white opacity, extending from the wound, was visible on the second day ; this cleared up completely in all the cases in a few days.

Dr. Wood-White has omitted to state the strength of the solution of corrosive sublimate used by him, and also whether he has used the same solution alone in other cases ; but, assuming that the solution was of the strength ordinarily employed, the conclusion seems a reasonable one that the effect produced was

in some way dependent upon the combined action of the cocaine and corrosive sublimate; and some of Würdinger's experiments appear to support this.

Dropping fluorescein into a cocainized and into a non-cocainized eye at the same time, Würdinger found that in the non-cocainized eye only the superficial layers became fluorescent, but that in the cocainized eye the deeper layers also became affected. When the epithelium was removed from a limited area, and "methyl-blau" was dropped upon the abraded surface, it alone became colored in the non-cocainized eye, while in the cocainized eye the coloring matter extended through the whole cornea. It seemed clear, therefore, that the effect of the cocaine was to increase the absorbent power of the cornea. Finally, Würdinger found that weak solutions of boracic acid, corrosive sublimate, and even of common salt, which in the normal eye were perfectly innocuous, in the fully-cocainized eye produced a turbidity of the cornea, identical with the early stage of the striated keratitis which sometimes follows cataract extraction.

If subsequent experiments should verify these conclusions, it is evident that the views at present held as to the advisability of employing corrosive sublimate as an antiseptic will have to be considerably modified. It is of the utmost importance that these investigations should be carried further, in order to ascertain what is the weakest solution of corrosive sublimate capable of producing the lesions described, and the weakest that is efficient as an antiseptic. In the mean time steps should be at once taken to ascertain whether any interstitial lesions of the cornea have ensued when cocaine has been used alone. It is significant that most of the reported cases have been furnished by institutions in which corrosive sublimate is used as a matter of routine; but in many instances it is not stated whether it was actually used or not, the point not being considered of any importance at the time of publication.—*British Medical Journal*, August 7, 1886.

THE INCOMPATIBILITY OF CHLORAL WITH POTASSIUM BROMIDE AND ALCOHOL.

We have in previous issues referred to the peculiar incompatibility exhibited by chloral in the presence of potassium bromide and alcohol, and have given the experiments of PROF. MARKOE in explaining this, together

with the various criticisms which his statements called forth. Prof. Markoe again replies to his critics in the *Pharmaceutical Record* for June 15, 1886. The original prescription in which the incompatibility was first noted was composed of the ingredients shown by the following copy:

R Potass. bromid.,
Chloral hydrat., $\bar{a}\bar{a}$ \bar{z} iii;
Tr. opii et camph.,
Syr. zingiber., $\bar{a}\bar{a}$ \bar{z} iss. M.

S.—One or two teaspoonfuls in half a wineglass of water every two to six hours. For sleep.

When this mixture is made up, it always results in the formation of two layers,—a dark-colored liquid floating upon a light-colored denser liquid.

The writer explained this decomposition as due to the change of the chloral hydrate into the less soluble chloral alcoholate, the alcohol being furnished by the paregoric elixir called for in the prescription.

Three experiments were then detailed, in which the endeavor was made to prove that the alcohol was the sole cause of the trouble.

These experiments were printed in the following form in the volume of the Proceedings, as well as in all the reprints of the paper:

1. Potass. bromid., grs. lx;
Chloral hydrate, grs. lx;
Water, $\bar{f}\bar{z}$ vi;
Syrup of ginger, $\bar{f}\bar{z}$ vi.

These articles formed a perfect solution, which did not separate on standing.

2. Potass. bromid., grs. lx;
Chloral hydrate, grs. lx;
Water, $\bar{f}\bar{z}$ iii;
Alcohol, $\bar{f}\bar{z}$ iii;
Syrup of ginger, $\bar{f}\bar{z}$ vi.

In this experiment it will be noted that the ingredients differ from the original only in the substitution of diluted alcohol for the paregoric. After standing a short time this mixture separated into two layers, the upper being of a light straw color.

3. This experiment was with the same ingredients as in No. 2, except that the alcohol was not added until after the mixture had been standing an hour. No separation took place before the addition of the three fluidrachms of alcohol, but the separation occurred promptly after the addition of the alcohol. These experiments prove that the alcohol is the cause of the trouble, and the writer thinks that the chloral hydrate is

changed into the less soluble chloral alcoholate.

A careful reader would have readily seen that the writer's intention was to take just one-half the quantity of the original prescription for the experiments 1, 2, 3, which would require 90 grains of each of the salts ordered in place of the 60 grains as printed. Most of the critics did not take the trouble to try the experiment with the original prescription, but repeated experiments 2 and 3, using only 60 grains of each of the salts, and, finding no separation, at once jumped to the conclusion that the thing was all wrong. The misprint, due to a blunder in making hectograph copies of the original paper, was corrected in some of the pharmaceutical journals.

An English critic, in a very courteous note to the *Pharmaceutical Journal*, took exceptions to the statement that alcohol was the sole cause of the decomposition, and claimed that the presence of sugar was necessary for the separation of the chloral compound.

The following experiments will dispose of this criticism :

4. Potassium bromide, grs. xc;
Chloral hydrate, grs. xc;
Water, fʒiv;
Alcohol, fʒii.

The salts were dissolved in the water, forming a clear solution; on the addition of the alcohol and shaking together, the mixture became milky, and on standing separated into two layers, the upper forming somewhat more than a fourth of the whole.

5. Like No. 4, but having three fluidrachms of alcohol; behavior like No. 4.

It will be seen, therefore, that the presence of sugar is not needed to produce the separation of the chloral; it is only necessary that we have very strong solutions of chloral and bromide. The addition of more alcohol, or dilution with water, will restore a perfect solution of the separated chloral compound.

The presence of sugar will greatly facilitate the decomposition, by allowing it to take place in weaker solutions.

TREATMENT OF ANGIOMA.

DR. BÖING has treated five cases of angioma in children of 2 to 9 months old by daily brushing the tumor with a four per cent. solution of sublimate collodium for four consecutive days. The result was in each case very successful.

POISONING BY SAUSAGES.

Familiar as is poisoning by sausages, there yet remains much to be learnt of the manner in which the poison or poisons act. Sometimes an inorganic poison has been suspected, but generally it is supposed that the deleterious agents are in some way related to the occurrence of decomposition in the organic contents of sausages. NAUWERCK, of Tübingen, has investigated a series of cases of poisoning by sausages, and has come to the conclusion that the symptoms were to be largely attributed to the agency of certain complex bodies that are known to be derived from the decomposition of albumen. Some of the symptoms of sausage-poisoning are of considerable interest, such as the paralysis of accommodation for near objects of vision, also the dilatation of the pupil and drooping of the upper eyelid. It does not follow that sausages are harmless because a chemical examination of them has failed to detect poison in sufficient quantity to prove noxious to the organism. The sausages in these cases may simply contain the germs of decomposition, and not begin to decompose until they have reached a suitable site in the intestinal canal of their host. If all sausages contained poison ready formed at the time of ingestion, it would be difficult to understand how it happens that a considerable period of time occasionally elapses before the symptoms of poisoning commence. A study of the mode of action of the various poisons that are evolved during the process of decomposition of albumens has proved of great service to the science of pharmacological physiology.—*Lancet*, August 7, 1886.

LEAD IN TINNED PROVISIONS.

DR. RABCHEVSKI, of St. Petersburg, has published the results of a series of investigations made on various kinds of tinned provisions, with the view of determining the suitability of food preserved in this way for the purposes of the army commissariat, especially when on active service. He first examined the tinned plates in the preserved provision manufactories, and found them in all cases quite free from lead. The case of the solder was of course different, the amount of lead contained in it varying from sixty to seventy per cent. The chemical examination of the contents of the tins was conducted by Pouchet's method, and showed that while some classes of food, such as roast meat, were quite free from lead, others, such as sour cabbage,

which to a Russian is a very important article of diet, contained very appreciable quantities of lead, in one case as much as 0.327 per cent.; so that a man taking 200 grammes, or about a quarter of a pound, of this for his dinner would introduce into his system 0.654 grammes, or about 8 grains, of lead,—a quantity which, especially if taken frequently, can by no means be considered as harmless. The conclusion arrived at by the author is that these tinned provisions should only be used in the army in case of urgent need, and for a very short time. It would appear, too, that a choice might be made; only such classes of preserved food being accepted by the authorities as were shown to be least likely to become contaminated by the injurious substances contained in the solder.

GASEOUS MEDICATION PER RECTUM.

The ingestion of gaseous medicines by the lower bowel was the subject of a recent communication by M. L. BERGEON to the Paris Academy of Sciences (*Comptes Rendus*, July 12). His research has extended to a variety of diseases, but for the present he only records his experience in the treatment of pulmonary phthisis. After having tried a variety of balsamic substances of parasiticide or antiseptic repute, M. Bergeon gave the preference to sulphurous mineral waters (Eaux Bonnes, Challes, etc.). A current of from four to five litres of carbonic acid gas traversing from two hundred and fifty to five hundred grammes of the sulphurous mineral water was introduced per rectum twice in the twenty-four hours. After a few days' use, cough was notably diminished and almost suppressed, the expectoration greatly modified in quality and quantity, the sweating stopped, and the general state improved; and that not only in incipient, but also in confirmed phthisis. Daily auscultation established the disappearance of moist râles.—*Lancet*, August 7, 1886.

ON HYPNONE.

We learn from the *Münch. Med. Wochenschr.*, vol. xxxiii., No. 14, 1886, that LEUBE has seen good results from hypnone, which he gave to fourteen patients for some time every evening in the dose of 2 to 4 drops in gelatin-capsules. Four, and even 2 drops, sufficed usually to procure a quiet sleep lasting several hours. In phthisical patients the drug seemed to act particularly well. Its action appears one-half to one and a half hours after its in-

gestion. Untoward effects were not observed except in one instance, where 6 drops caused headache and vomiting after a prolonged sleep.

BROMINE IN DIPHTHERIA.

SEÑOR LOVAT A. MULCACHY, of Buenos Ayres, finds great advantage in cases of diphtheria in giving a solution of bromine. The bromine is simply dissolved in water in the proportion of 1 to 2500. A teaspoonful of this is given every ten minutes. He says that children will swallow it automatically even when asleep. For infants under three years of age the strength may be diminished to half that mentioned above. He cites several cases showing the successful results obtained by this method, but he points out the importance of the administration being continued for some days, and of the medicine being given exactly every ten minutes. As to local caustic applications, he considers that they serve no purpose whatever, but only irritate and distress the patient.—*Lancet*, August 14, 1886.

THE FUNCTION OF THE TONSILS.

DR. R. HINGSTON FOX, in an interesting article on the Functions of the Tonsils, in the twentieth volume of the *Journal of Anatomy and Physiology*, expresses the opinion that these glands belong to the digestive and not the respiratory tract, and that their function is to reabsorb certain constituents of the saliva in the intervals of meals which would otherwise be wasted. He thinks that the view of their having an absorbing function is further supported by the strong evidence of the power of the tonsils to absorb morbid poisons directly from the saliva.—*Lancet*, July 24, 1886.

ANTISEPTIC PAPER DRESSING.

DR. DON ANTONIO MORALES PEREZ describes in the *Revista Médica* of Seville a simplified antiseptic or Listerian dressing, consisting of bibulous paper heated to 110° C. and soaked in a solution of carbolic acid, boracic acid, or corrosive sublimate. This is placed over the wound in about eight layers, and covered with sheet gutta-percha or mackintosh, the whole being secured by an india-rubber bandage. The writer claims for this dressing the advantages of cheapness and portability, and thinks it will be found very serviceable in the field and in small hospitals.—*Lancet*, August 21, 1886.

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Original Communications.

ON VEGETABLE DIET AND ON FATTY FOODS.*

BY PROFESSOR DUJARDIN-BEAUMETZ, PARIS, FRANCE.

GENTLEMEN,—If man claims a variety of aliments from the animal kingdom, equally important are those furnished by the vegetable kingdom. Considered as a whole, these vegetal foods contain as elements suitable for nutrition, 1, certain albuminoid substances,—gluten, vegetable albumen, casein,

legumen, and fibrin; 2, starch; 3, dextrine and glucose; 4, fatty matters; 5, salts and water.

Foods thus constituted become complete aliments,—i.e., aliments which contain all the primordial elements necessary for nutrition; only the vegetal proteids, the salts, and the fatty matters are in quantity insufficient to sustain life, at least in man, while, on the other hand, sufficing for the herbivora. The word *insufficient* is not even altogether applicable to man, for there are whole populations that are strictly vegetarian. In order, however, fully to meet the requirements of the economy, a great quantity of vegetable aliments must be ingested to supply the twenty grains of nitrogen which a man loses daily.

* A lecture on Hygienic Therapeutics, delivered in Cochin Hospital. Printed from advance sheets.

The advantages of an exclusively vegetable diet have been latterly much overrated. We have heard it affirmed that by perseverance in such a diet man might successfully resist most diseases, and attain to a great age ; this is the doctrine of vegetarians. While recognizing the great benefits which may be derived from a purely vegetable diet in certain affections of the stomach, I believe that man, by his anatomical and physiological constitution, is omnivorous, enjoying the fullest possession of his powers on a mixed diet ; on this subject I shall hereafter have more to say.

The albuminoid principles of vegetables have been well studied by Ritthausen. They consist of vegetable albumen, casein, legumen, gelatin, gluten, and congluten. As for gluten, its composition is very complex, and Ritt-hausen affirms that it is made up of at least four albuminoid substances,—gluten-casein, insoluble in alcohol, and three substances soluble in alcohol,—gluten-fibrin, gliadine, and mucedine.

I give you here from Ritthausen the ultimate analysis of these vegetable albuminoid substances, as obtained from various cereals and legumes :

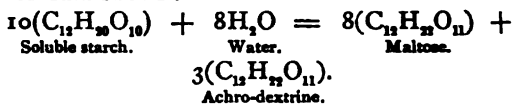
	Wheat.	Barley.	Indian corn.	Lupines.	Peas.	Beans.
Carbon.....	53.12	52.86	52.31	52.63	52.94	53.33
Hydrogen.....	7.18	7.23	7.73	7.46	7.13	7.19
Nitrogen.....	17.60	15.75	15.49	17.24	17.14	17.14
Sulphur.....	1.55	1.18	.....	0.76	1.04	1.04
Oxygen.....	20.55	22.98	.....	21.91	21.75	21.75

If you glance over the following table, which gives the proximate composition of our principal amylaceous foods, you cannot fail to observe that in general the amount of starch is in inverse proportion to that of the azotized matters :

In the vegetable alimentation starch and the amylaceous principles play an important part. You know that they are absorbed in the state of glucose, and that the transformation of starch into glucose is the result of two ferments,—the one, the product of mixed saliva, is the salivary diastase ; the other, which belongs to pancreatic juice, is amylapsin.

This transformation of starch into sugar is not as simple as one might imagine at first sight. The supposed breaking up of the starch molecule into one molecule of dextrine and one of grape-sugar is not a representation of the reality, if we may trust the experiments of Musculus, of O'Sullivan, of Brown and Heron, and of William Roberts.

According to these experimenters, we must consider this reaction as much more complex, and as terminating by the formation of maltose and achro-dextrine, as the following formula shows :



Ewald, of Berlin, has recently studied the influence which saliva exercises upon the saccharification of amylaceous matters in the stomach. He has shown that the transformation of starch into sugar is effected to a very trifling extent in the stomach, and that after the administration of a concentrated decoction of starch you may note the presence of fermentable dextrine and maltose, but that the metamorphosis of maltose into sugar takes place only in the intestine. If to the facts attested by Ewald we add that the pancreatic juice furnishes a ferment adapted to the digestion of amylaceous matters, we are warranted in the conclusion that starchy sub-

Ritthausen's Table of the Composition of Amylaceous Aliments.

Substances.	Azotized matters.	Starch.	Dextrine and Glucose.	Fats.	Cellulose.	Salts.	Water.	Authorities.
Wheat.....	20.68	62.49	8.36	2.32	3.02	2.86	.....	Payen.
Rye.....	9.00	57.50	10.00	2.00	3.00	1.90	14.60	Boussingault.
Oats.....	11.90	53.68	7.90	5.50	4.10	3.00	14.00	
Barley.....	12.96	66.43	10.00	2.76	4.73	2.10	.....	Payen.
Bread crumbs.....	6.67	53.55	3.79	0.70	.....	0.84	44.45	Violet.
Bread crust.....	13.00	62.58	3.88	1.18	.....	1.21	17.15	
Army bread.....	8.85	44.50	4.12	0.70	6.07	1.39	34.17	Poggiale.
Indian corn.....	12.80	58.40	1.50	7.00	1.50	1.10	17.70	Boussingault.
Rice.....	6.43	77.75	0.60	0.43	0.50	0.68	14.40	
Potatoes.....	2.05	20.00	1.09	0.11	1.04	1.26	74.00	Payen.
Horse bean (Faba equina).....	30.80	48.00		1.90	3.00	3.50	12.50	
Vetches.....	27.30	48.90		2.70	3.50	3.00	14.60	
French bean.....	25.50	55.10		2.80	2.90	3.20	9.90	
Lentils.....	25.20	56.00		2.60	2.40	2.30	11.50	
Peas.....	23.80	58.80		2.10	3.50	2.10	9.80	
English bean.....	24.40	61.50		1.50	3.00	3.60	16.00	

stances are exclusively digested in the intestine.

There is always an interest in knowing (and this especially with reference to the treatment of certain affections, and glycosuria in particular) the quantity of starch contained in cereals as vegetables. The following table from Nedats gives the percentage of starch in wheat, rye, potatoes, etc. :

	Per cent.
Rice.....	74.10
Indian corn.....	65.90
Wheat flour.....	63.00
Whole wheat.....	59.60
Rye flour.....	59.84
Millet.....	59.90
Buckwheat	50.00
Wheat bread.....	42.70
Oatmeal	39.10
Peas.....	37.00
Rye bread.....	36.25
Beans.....	36.00
Jerusalem artichokes.....	16.60
Potatoes.....	15.50

We will now study successively cereals, legumes, and fruits.

The cereals serve as the basis of the principal food, the universal food, of man,—bread. Without entering here into the details and complex chemical reactions of bread-making, I must call your attention to the nutritive value of bread. In this respect it is important to distinguish the crust from the crumb ; the crust is much the more nutritious, as the following analysis by Barral shows :

Water.	Crust.	Crumb.
Water	17.15	44.45
Insoluble azotized matters (gluten, etc.).....	7.30	5.92
Soluble azotized matters (albumen and the like).....	5.70	0.75
Soluble non-azotized matters (dextrine, sugar).....	4.88	3.79
Starch	62.58	43.55
Fatty matters.....	1.18	0.70
Mineral matters.....	1.21	0.84
	100.00	100.00

It is generally believed also that bread made from the coarser, inferior flours is more nutritious than bread made from superfine flour. This is a mistake, and Violet has shown us that the finer and whiter the flour the more nitrogen it contains. This is Violet's table :

	Percentage of nitrogen.		
	Second quality.	First quality.	Superfine.
First sample.....	0.92	1.18	1.39
Second sample.....	1.05	1.36	2.06
Third sample.....	0.99	1.02	1.25
Average	0.99	1.15	1.57

Nevertheless, in placing ourselves on a somewhat different stand-point, and in judging the nutritive value of bread not by the quantity of nitrogen which it contains, but by that of its saline principles, bread made from flour that is incompletely bolted possesses certain advantages.

You know, in fact, that the husks of grains are especially rich in phosphates ; hence it has been recommended in certain cases, where it is desired to introduce phosphates into the economy, to give bran bread. When I come to speak of the dietetic treatment of diabetes, I shall show you by what artifices ordinary bread has been replaced by bran bread, or, better still, by gluten bread.

Rye, Indian corn, buckwheat, and even oats have been substituted for wheat in the fabrication of bread. Two of these deserve special mention. Corn bread is exceedingly nutritious. Cornmeal contains a larger proportion of fatty matters than the flour of any other cereal ; hence it is that corn bread occupies a large place in the dietary of certain peoples, especially in regions where wheat cannot be raised. It has, however, a peculiar taste, which renders it repugnant to most persons, at least till they become accustomed to it. Oatmeal has been highly vaunted by the Scotch physicians, who claim that the fine physical development of that nation is due to the fact that they are reared on oatmeal. In a work undertaken by me, in conjunction with Ernest Hardy, I have shown the large proportion of nitrogen contained in oatmeal. The following analysis, published by ourselves, will make this plain :

Water.....	8.7
Fatty matters.....	7.5
Starch.....	64.0
Azotized matters, gluten	11.7
Mineral matters.....	1.5
Cellulose, and other matters not determined.....	6.6
	100.0

Hence it is that in the feeding of horses, oats, by reason of their richness in nitrogen, have been considered the force-giving aliment *par excellence*. Add to this that oats contain a particular excitant principle, which Sanson has isolated, and the effects of which he has studied. This excitant principle is found especially in black oats, and its effects on the horse last, on an average, for an hour after giving a quart of oats. The large percentage of iron in oats is also worthy of note.

This double quality of being a strengthen-

ing and excitant aliment renders oatmeal suitable for the dietary of children, and you will find in the thesis of my pupil Marie* interesting facts relative to this subject. I believe even that we might to-day complete our researches by studying on man, as Sanson has done on horses, the effects of the excitant principle, which he has isolated, and seeing if it may be utilized in therapeutics.†

Vegetables are divided into starchy and herbaceous. Starchy vegetables (legumes,—*i.e.*, beans, peas, lentils) contain a great quantity of legumine, and for this reason are very nutritious. Hence it is that beans have been called the *poor man's meat*. The following analysis is from Boussingault :

COMPOSITION OF SEEDS OF THE LEGUMINOSÆ.

	White beans.	Peas.	Lentils.	English beans.
Legumine	26.9	23.9	25.0	24.4
Starch and dextrine...	48.8	59.6	55.7	51.5
Oily substance.....	3.0	2.0	2.5	1.5
Lignine and cellulose.	2.8	3.6	2.1	3.0
Salts.....	3.5	2.0	2.2	3.6
Water.....	15.0	8.9	12.5	16.0
	100.0	100.0	100.0	100.0

The husk which covers these seeds is composed exclusively of cellulose, which renders them somewhat indigestible. So when you have to do with weak stomachs, or persons who masticate imperfectly, you should direct them to eat their beans or peas hulled, and boiled into a mash or soup.

Among these legumes I must call your attention to lentils, which deserve especial mention from the point of view of their nutritive value, being not only rich in azotized matters but also containing much iron.

Boussingault, who has given us a very instructive analysis of different aliments with respect to the iron which they contain, has assigned the first place to lentils ; in fact, the proportion of this metal in lentils is double that which is found in beef, although surpassed by oats :

	Quantity of iron in 1000 parts.
Beef's blood.....	0.03750
Blood of swine.....	0.06340
Muscle of beef.....	0.00480
Muscle of veal.....	0.00270
Muscle of fish (Merlan).....	0.00150
Fresh codfish.....	0.00420

* Marie, "A Study on the Employment of Oatmeal" (*Thèse de Paris*, 1873).

† Sanson, "Experimental Researches on the Excitant Action of Oats" (*Jour. d. Anat. et de Phys. de Ch.* Robin et Pouchet, t. xix., 1883, p. 113).

	Quantity of iron in 1000 parts.
Hens' eggs (without the shell).....	0.00570
Snails	0.00360
Beef bones.....	0.01200
Sheep's foot.....	0.02090
Wheat bread.....	0.00480
White beans.....	0.00740
Oats.....	0.01310
Lentils	0.00830
Potatoes.....	0.00160
Cow's milk.....	0.00180
Carrots.....	0.00090
Indian corn.....	0.00360
Rice.....	0.00150
Apples.....	0.00200
Spinach.....	0.00450
Cabbage.....	0.00390
Red wine of Beaujolais.....	0.01090
Beer.....	0.00400
Seine water	0.00104

But do not forget that in order that lentil flour may possess all its properties it must be cooked, and it is in this form that you should prescribe it for your patients. It is quite probable that the sweet revalésière (a patent farinaceous preparation common in France), and which has been so much advertised, is composed in part of malted lentil flour.

By the side of these starchy vegetables, and at their head, should be placed potatoes, an aliment to-day quite as indispensable as bread. You have seen by a foregoing table how small the proportion of starch contained in potatoes, and in this respect this vegetable occupies a low place ; hence the applicability of potatoes to the dietary of diabetes.

The herbaceous vegetables may be divided into three great groups,—vegetables rich in vegetal albumen and in nitrogen, such as cabbages, water-cresses, asparagus, mushrooms, truffles ; then mucilaginous and saline vegetables, such as lettuce and chiccory ; lastly, vegetables rich in acids, such as sorrel and tomatoes. Let us glance over these three groups.

The first comprises those vegetables which are the most nutritious but whose digestion is at the same time the most difficult. Leven maintains that cabbage is very hurtful to the stomach. I cannot agree with him, and regard cabbage as an excellent aliment, highly azotized, which is well digested when sufficiently cooked.

I will say a few words about mushrooms. Despite the large quantity of water which enters into their composition,—eighty-five to ninety per cent.,—they contain considerable nitrogen, and for this reason are nutritious. Carl Wørner, of Upsal, who has recently studied the alimentary value of mushrooms,

has shown that a kilogramme of beef has for equivalent :

	Kilogrammes.
In edible mushrooms (<i>Agaricus esculentus</i>).....	9.30
In oyster mushroom (<i>Agaricus ostreatus</i>)	10.60
In morilla (<i>Morchella esculenta</i>).....	15.20
In chanterelle mushrooms (<i>Chanterellus cibarius</i>)	41.60

The second class contains the mucilaginous and saline vegetables, and includes chiccory, lettuce, spinach, artichokes, celery, string-beans, asparagus, green peas, carrots, beets, and pumpkins. These are the aqueous vegetables, and the quantity of water which most of them contain is represented in the following formula :

	Per cent.
Cucumbers.....	96.2
Asparagus.....	92.2
Spinach.....	91.7
Cabbage.....	87.7
Turnips.....	87.0
Carrots.....	87.5
Turnip-cabbages.....	82.0
Artichokes.....	76.0
Jerusalem artichokes.....	76.0

Certain of these vegetables contain also inosite or sugar, as the beet and carrot ; the greater number are rich in salts, such as malates and oxalates of lime or potassium. This richness of vegetables in potassium is one of the most interesting points connected with their composition, and shows their utility in nutrition. Boussingault has given a good analysis of vegetables with respect to the quantity of potassium which enters into their composition. One kilogramme of the following vegetables contains the amount of potassium here given :

	Grammes.
Cabbage.....	2.6
Chiccory.....	1.7
Turnips.....	3.7
Carrots.....	2.5
Beets.....	6.8
Potatoes.....	3.2
Spinach.....	4.5

Hence Beunge has insisted on the necessity of introducing into the dietary of individuals who subsist largely on vegetables common salt, in order to maintain a constant equilibrium between the salts of potassium and sodium, an equilibrium which is essential to a healthy nutrition.

The last group is constituted by vegetables rich in acid, and particularly in oxalic acid. We have here sorrel and the tomato, which, when eaten too freely, may give rise to oxaluria. There has been much discussion respecting this physiological oxaluria, some pretending that it may be brought about in-

dependently of alimentation, others that it is always of alimentary origin. While believing that the latter view is the correct one, I shall reserve what I have to say on this subject till I come to speak of the diet of urinary gravel, and in particular of oxalic acid gravel. It remains to finish what pertains to vegetable foods by speaking of fruits.

Fruits complete the alimentation of man by the acids, the salts, and the sugar which they contain. Their general composition is very complex ; besides sugar, salts, and acids, gum, cellulose, and a small proportion of azotized matter enter into their composition. The following is Berard's analysis :

ANALYSIS OF RIPE FRUITS (BERARD, 1821).

	Apricots.	Peaches.	Pears.	Cherries.	Prunes.
Azotized matters.	0.17	0.93	0.21	0.57	0.28
Coloring matters.	0.10	.....	0.01	..	0.08
	(Yellow.)		(Green.)		(Green.)
Cellulose.....	1.86	1.21	2.19	1.12	1.11
Gum.....	5.12	4.85	2.07	3.23	2.06
Sugar.....	16.48	11.61	11.52	18.12	24.81
Malic acid.....	1.80	1.10	0.08	2.01	0.56
Lime.....	Traces.	0.06	0.04	0.10	Traces.
Water.....	74.47	80.24	83.88	74.85	71.10
	100.00	100.00	100.00	100.00	100.00

The acids contained in fruits are very variable. Thus, peaches, apricots, apples, pears, and currants contain malic acid ; grapes, tartaric acid ; oranges and lemons, citric acid ; quinces, pectic acid ; the latter, by undergoing transformation into pectine, enables us to make jelly of this fruit.

Like vegetables, fruits introduce into the economy alkaline principles, such as lime and potassium ; they are then useful foods. By the sugar which they contain they serve also for nutrition, but when eaten too freely they become purgative.

I ought especially to call your attention to grapes, from which therapeutics has derived such great advantage in the treatment of certain affections,—a kind of treatment known under the name of *grape-cure*. Very much in vogue in certain parts of Switzerland and Germany, and now employed in France, this mode of treatment is particularly applicable to gastro-intestinal affections. It has proved of service in abdominal plethora, and paretic conditions of the alimentary canal from high living or overeating. If we may trust Carrière and Curchod, the grape-cure is also an efficacious means for combating diarrhœic fluxes and certain diathetic states, as gout.*

These are the principal rules to follow.

* Carrière, Grape-Cure in Switzerland in the Treatment of Chronic Diseases ; Curchod, Theoretical and Practical Treatise on Grape-Cure. Vevay, 1860.

You will direct the patient to eat before his meals a certain quantity of grapes, which he must himself gather from the vines, and which should be eaten while being gathered. I say a certain quantity, for it is impossible to say exactly how much each patient should eat. He ought, however, to eat to complete satiety, for the benefit is largely due to an excess being ingested. As for the kind of grapes to choose, the best is the white grape, with fine skin and delicate pulp. The skins must, of course, be rejected, and the seeds, if possible. As is the case with the whey-cure system, there are two important factors in the causation of the good results obtained from the grape-cure. The fruit itself by the saline elements which it introduces acts favorably on the surface of the digestive tube, and the sojourn (with active exercise) in the open air has an invigorating effect. It is, in fact, in the midst of the most beautiful scenery of Germany, Switzerland, Silesia, and Tyrol that the grape-cure is carried out. This completes what I have to say about vegetable foods, and I pass on to the consideration of fatty foods.

The fatty aliments consist of butter, fats, and oils. When I was on the subject of primordial alimentary principles, I reminded you of the importance of these fatty aliments in nutrition. Not only do they furnish to the economy the hydro-carbonaceous materials which it needs, but they oppose, in a certain measure, if we may trust the experiments of Debove and Flamant, the destruction of albuminoid elements, so that we may consider them as *sparing* aliments (*aliments d'épargne*). If their nutritive value is great, their digestibility is feeble; hence it is that these fatty foods quite often prove to be the most indigestible, and when eaten in moderation they are a source of irritation and discomfort in the digestive tube, and, if taken in considerable quantity, they become real cathartics, constituting what has been described under the name of oily purgatives.

All these fatty substances are of vegetable or animal origin, constituting the fixed oils or fats. We may even add a third group,—the mineral fatty bodies, such as vaseline, a product of petroleum, and which, by a curious artificial process of refinement (as Riche has lately shown) has become an article of food. It has, however, been shown by experiments on animals that if vaseline be not toxic it does not possess any nutritive properties.

Among these fatty bodies there is one

which plays a considerable rôle in therapeutics. I refer to cod-liver oil. From time immemorial among the maritime populations of the extreme north—in Iceland, in Greenland, in Norway—cod-liver oil has not only formed an important article of food, but has been applied to medical uses, special curative virtues having been attributed to it in rheumatism, neuralgia, and consumption. Percival and Darbey, at the end of the last century, called the attention of physicians to these remedial properties, but it was not till 1822, and consecutive to the work of Schenck, that the employment of this oil became general; and in France its speedy popularity was due to the labors of Bretonneau and Duclos.

To-day everybody is agreed in ascribing to cod-liver oil physiological properties clearly defined, and which consist especially in an increase of the weight of individuals to whom this oil is administered. We have here one of the results, the best demonstrated of late years, as you will see by the monograph of Rendu, of Lyons, which shows that in promoting increase of weight and fattening in the tuberculous, cod-liver oil is vastly superior to arsenic.*

Since Hoffer, of Lorme, found iodine in cod-liver oil, there has been a disposition to attribute to this metalloid, as well as to the bromine, sulphur, and phosphorus which the oil contains, the curative action which it possesses. I believe that this is a mistake, and I am persuaded that it is for the most part as fatty substances that these oils do good in the treatment of tuberculosis; and if I insist on this point, it is because the attempt has been made to substitute for cod-liver oil certain iodized oils, which are far from having the same effects.

The question has been often asked, What kinds of cod-liver oil are the best? Shall we give the preference to the pale over the brown oils? I do not think that there is now any doubt as to the answer which should be given to this question, and almost everybody is agreed that the pale oils, known as *virgin oils*, are better tolerated by the stomach than the brown oils, and are more palatable, while being of equal therapeutic value.

Moreover, the fabrication of these cod-liver oils has undergone great improvement, and to-day, with the exception of oleum morrhue of Berthé, which is still made in Paris, all the

* Joanny Rendu, Experimental and Comparative Study of Arsenic and Cod-Liver Oil in the Treatment of Pulmonary Phthisis. Lyons, 1878.

other oils are manufactured at the fishing stations in Sweden and Norway. Instead of making use of livers that have undergone partial decomposition, as was the custom formerly, only fresh livers are now used. These are thoroughly heated over a sea-bath and subjected to pressure. It is, then, the fresh virgin oil which you should always prescribe. The following analysis gives you the composition of these different oils :

Cod-liver oil.				
	White.	Amber colored.	Pale yellow.	Brown.
Oleine.....	988.700	988.675	988.695	987.449
Margarine...	8.060	8.066	8.089	9.264
Chlorine.....	1.122	1.122	1.116	1.018
Iodine.....	0.027	0.327	0.322	0.310
Bromine.....	0.043	0.043	0.030	0.031
Sulphur.....	3.201	0.200	0.196	0.156
Phosphorus..	0.203	0.204	0.200	0.196
Acids.....	0.000	0.439	0.897	0.924
Loss.....	1.344	0.924	0.449	0.102
	1000.000	1000.000	1000.000	1000.000

There has been some dispute as to whether it would do to substitute for cod-liver oil oil obtained from other fishes, such as the skate and dog-fish. By referring to the comparative analysis of Delattre, you will see that the oils of the livers of the ray and the dog-fish are almost identical in composition with cod-liver oil :

	Cod-liver oil.	Ray-liver oil.	Dog-fish-liver oil.
Oleine.....	988.700	986.945	987.114
Margarine.....	8.060	11.017	10.121
Chlorine.....	1.222	1.125	1.018
Iodine.....	0.327	0.105	0.345
Bromine.....	0.043	0.039	0.034
Sulphur.....	0.201	0.165	0.160
Phosphorus.....	0.203	0.286	0.206
Loss.....	1.344	0.238	0.942
	1000.000	1000.000	1000.000

I do not propose here to enter into the detail of the administration of cod-liver oil. A multitude of processes have been devised, which belong rather to pharmacy than to dietetics. There are, however, two points pertaining to the latter to which I desire to call your attention.

First, I cannot too much urge the importance of giving cod-liver oil at meal-time, for when mixed with the whole mass of the food, and at the moment of the digestive process, these oils are better supported than when given on an empty stomach. Some have even gone so far as to recommend the incorporation of cod-liver oil with bread, but this combination is far from being palatable, and those who have used it have soon taken a disgust to both cod-liver oil and bread. The

only association which seems to me a happy one is that which consists in the union of cod-liver oil with sardines, the latter oil being used instead of the oil in which sardines are ordinarily preserved.

You know also that the instrument-makers have devised spoons tapering towards the end, which enable you almost to pour the oil into the throats of your patients, and thus avoid the disagreeable taste which cod-liver oil leaves in the buccal cavity. Habit, moreover, has a good deal to do with the repugnance which persons have to taking cod-liver oil, and while the people of the north relish it, the inhabitants of Central Europe find it very disagreeable. But it is a fact that children generally imbibe the oil with willingness, and, when the habit of taking it is formed, with avidity.

I advise you to discard all those pharmaceutical emulsions which have been devised to mask the taste of cod-liver oil. There are two of these mixtures, nevertheless, which deserve to remain, as they associate with the oil principles which are of use in the treatment of scrofula and tuberculosis. I refer to the preparations of *oleum morrhue* with iodoform and eucalyptol. The first, highly recommended by Fonsagrives, has the following formula :

R Pale ol. morrhue, 100 grms. (ʒiiiss.);
Iodoform, 0.25 grm. (3¼ grs.);
Essential oil of anise, gtt. x. M.

The preparation with eucalyptol is as follows :

R Pale cod-liver oil, 100 parts;
Eucalyptol, 1 part. M.

As for the dose of cod-liver oil and the quantity to be administered daily, this is very variable. Jaccoud, who is one of the most strenuous advocates of this remedial agent in the treatment of tuberculosis, has gone as far as 300 grms. (or about 10 ounces) per day. This is very large dosing, and few stomachs can bear anything like this quantity. Generally one is obliged to be satisfied with the moderate dose of a tablespoonful after each meal.

My regretted master, Behier, had an instinctive horror of cod-liver oil, and would never prescribe it; as a substitute, he recommended butter. Butter is, in fact, an excellent aliment, but very inferior as a fatty principle to fish oils.

Butter is constituted, as you know, of those oil-corpuscles which are in suspension in milk.

It contains 83.35 per cent. of pure butter and 16.25 of buttermilk. The composition of butter is very complex. What especially characterizes it is a sweet oil formed of a mixture of oleine and butyrine. Butyrine, in contact with air, undergoes transformation into butyric acid, which gives to rancid butter its disagreeable taste and smell. Bromeis has completed the analysis of Chevreuil, and gives the following as the composition of good butter :

	Per cent.
Margarine.....	68
Butroleine.....	30
Butyrine, caproine, and caprine.....	2

Butter is an excellent fatty aliment, the usage of which you will do well to recommend to feeble and emaciated persons. It enters into several pharmaceutical preparations. It is made the basis of several ophthalmic salves, such as the pomade of Regent, the pomade of Benedict, the pomade of St. André, of Bordeaux. These preparations ought every one of them to be now abandoned, for the tendency of butter to become rancid makes it a bad excipient, and the unalterable mineral fats are far preferable.

Under the name of *bromo-iodized butter*, Trousseau proposed the following mixture, which he designed to replace cod-liver oil :

R Iodide of potassium, 0.05 grm. ;
Bromide of potassium, 0.20 grm. ;
Chloride of sodium, 2 grms. ;
Fresh butter, 125 grms. M.

S.—To be spread on bread like butter.

I have, however, very little faith in any of these substitutes for cod-liver oil.

As intermediate between butter and milk should be mentioned cream, which has been vaunted in the treatment of certain consumptive affections and gastro-intestinal disorders. The following is Hasson's analysis of cream :

Butter.....	20 and sometimes 30 per cent.
Caseine.....	29 " " 11 " "
Serum.....	51 " " 59 " "
	100 100

Cream is, then, a mixture of butter, caseine, and serum. It is easily borne by weak stomachs, and doubtless sometimes renders service where other fats cannot be tolerated.

Such are the different points to which I desired to call your attention *à propos* of vegetable and fatty aliments. Now that you understand their composition, before studying the bases of Dietetics I must speak of Beverages. This I shall do in the next lecture.

ON THE NURSING AND CARE OF THE INSANE.*

BY CHARLES K. MILLS, M.D.†

WITH many matters that are sometimes included in the published or oral instructions which are given to nurses and attendants upon the insane, it is not my purpose to deal in the present lecture. In the lectures delivered in the other departments of the Training-School, the surgical and the medical in particular, specific directions have been given with reference to many things necessary to be known by those who are in attendance upon the sick or injured, whether sane or insane, such subjects as, for instance, dislocations and fractures, sprains, wounds, and hemorrhages ; artificial respiration ; sunstroke ; the recognition of different forms of insensibility ; the use of compresses, poultices, stupes, and fomentations ; and the treatment of bed-sores and ulcers.

Little has been published with reference to the nursing and care of the insane, except what may be found under the head of treatment in the general text-books on insanity. Two or three small books have appeared, during the present year, in Great Britain and in this country. One, entitled "A Handbook for the Instruction of the Attendants on the Insane," was prepared by a sub-committee of the British Medico-Psychological Association, appointed at a branch meeting held in Glasgow on February 21, 1884, and has been published in this country by Cupples, Upham & Co., of Boston. It contains much useful information and valuable instruction, but too much attention is devoted to the consideration of elementary anatomy and physiology. A more valuable work is entitled "How to Care for the Insane," by W. D. Granger, M.D., first assistant physician in the Buffalo State Asylum for the Insane, and published by G. P. Putnam Sons, New York and London. I have obtained from both of these books some valuable facts, hints, and suggestions ; but most of my remarks will be based upon observation and experience, and upon information obtained directly from specialists, and from the medical

* A lecture delivered before the nurses of the Training-School for Nurses of the Philadelphia Hospital, in the Insane Department of the Philadelphia Hospital. This lecture is part of a forthcoming book by Dr. Mills, entitled "How to Nurse and Care for the Nervous and the Insane," to be published by J. B. Lippincott Company.

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officers and attendants of insane hospitals with which I have been connected as consultant.

While a knowledge of the anatomy and physiology of the nervous system, and the nature of the different forms of insanity, may be of value to nurses and attendants, it is not strictly necessary that they should be fully informed about such subjects. There is, indeed, a certain danger that if too much attention is paid in the instruction of nurses and attendants to branches which belong, in strictness, to a true medical education, they may make the mistake of supposing that they are the doctors. The information absolutely necessary for nurses to have about the structure and functions of the nervous system can be compressed into a very small compass. It is necessary that they should know that the brain, with the details of the treatment of whose diseases they are sometimes intrusted, is an organ, which, although deeply seated within a thick and strong bony chamber, is subject, through the multitude of nerves which put it into communication with the outside world, to impressions which soothe, which annoy, which comfort, which distress, or which irritate.

It is well also that they should have some knowledge as to the forms of insanity and the special symptoms exhibited by certain patients; but, as already intimated, this knowledge need not be very extensive nor profound, but it should be exact as far as it goes. When it is remembered that even educated physicians, unless they have spent some time in the special study of insanity, have considerable difficulty in separating the different forms of insanity, it is easy to see that it would be folly for an individual who is not medically educated to try in a little brief instruction to obtain such information. The superficial features of a case will not enable an opinion to be reached as to its nature. Thus, in melancholia, which is a form of mental disease the essential feature of which is emotional depression, a patient sometimes has the violent outbreaks of agitation or excitement which are really the result of depression; and, conversely, a patient suffering from true mania may, for brief intervals, be in a state of great moodiness and depression. I might illustrate by references to other well-known forms of mental disease. What a nurse should know is that there are certain great divisions of diseases of the mind which give special symptoms, and that patients must be treated in this way or in that, according as they suffer from one or the other of these.

The doctor having once, in the presence of the nurse or attendant, clearly made the diagnosis of the form of mental trouble, the latter, knowing this, should bear certain facts in mind: should remember, for instance, that a case of melancholia is likely to be suicidal or to starve to death; that one of mania is not infrequently destructive or homicidal; that one of monomania may exercise duplicity, and may suppress for a time his delusions; that a dement is apt to be filthy, and not to take care of himself in any way; that an insane epileptic may one minute be peaceful and serene, and the next may be in a most dangerous motor or maniacal paroxysm. To illustrate still further, attendants should know that for various reasons accidents are very likely to occur among cases of paretic dementia,—the “general paretics,” as they are commonly termed in the hospital. These patients,—although often exceedingly weak and frail physically,—owing to their peculiar mental condition, to their delusions of strength and grandeur, are likely to be demonstrative and pugnacious. Frequently they have weak hearts, or degenerated livers or kidneys; often, as in locomotor ataxia,—a disease closely allied in pathology, and often merging into it,—their bones are very brittle; not infrequently they have lung-troubles. If such patients are handled as roughly as a case of ordinary acute mania, the consequences may be serious. Collapse has been known to come on almost instantly in a patient of this kind after a struggle, and in badly-regulated asylums bones are sometimes broken,—these accidents occurring even when no cruelty or unusual violence is intended or attempted. Attendants should remember that, as a rule, these patients are not as strong as their demonstrations cause them to appear. A serious accident, resulting in the death of the patient and the subsequent trial of the attendant on a charge of manslaughter, occurred not long ago in one of our large hospitals, the patient being a general paretic with pugnacious and aggressive symptoms, but with advanced mental and physical degeneration. It is on just such matters as flow out of considerations of this kind that attendants require to be informed; they need that kind of knowledge of mental disease which will enable them to discriminate in their management of patients of different classes.

Dr. Spray says that they should be encouraged to take a scientific interest in their patients; and, properly understood, this assertion is true. I simply do not think that it

will be of any service to the unfortunate patient for them to become sciolists in psychiatry,—that is, to have a smattering of knowledge of the anatomy, physiology, and pathology of insanity to parade on occasions, or to make use of improperly in behalf of the patient; but the kind of scientific knowledge which they should have in order to manage the insane for their best interests is that which comes from a study of the mental, physical, and other qualities of their patients, and of the details of the best methods of handling them morally, mentally, and physically. They should study their patients; they should learn what gives them pleasure or pain: what, in cases of melancholia, will best serve to draw them out of the mental shell into which they have retired; in cases of mania, what will best answer to soothe and calm their stormy minds; what, in case of fixed delusions, will best divert them from the unhealthy channels into which their thoughts are directed.

They should have sufficient knowledge of what is meant by delusions, hallucinations, illusions, etc., to enable them to understand the mental condition of the patient for certain practical purposes which come within their own province. Not a few insane have delusions which they, for a time, or altogether, suppress, or which are not freely or openly expressed. The existence of such delusions in most cases is, indeed must be, known to the physician who has the patient in charge, and the nurse or attendant should be promptly informed, in order not only to guard against special dangers which may arise out of the delusions, but also to be better able to manage the unfortunate patient without offence or injury. An attendant who knows that the patient has delusions which may lead to mutilation will be on guard against the occurrence of mutilation. In one case of which I have knowledge, one of the patient's delusions took the form that it was his duty to destroy his eyes, because they had offended, and he almost succeeded in accomplishing this insane purpose before a new attendant had become properly informed as to the delusion.

Under the influence of peculiar delusions mutilations of a most extraordinary character are sometimes performed, and attendants should therefore always be upon the alert. To no one so much as to the insane does the old saying, that it is the unexpected that always happens, so fully apply. After, seemingly, almost every avenue for the commission of suicide or self-mutilation has been provided against, some new device will be put in action,

and perhaps successfully. I recall one instance of a patient in a large hospital who was noticed speaking in a mumbling manner. He was at first passed by; but, on second thought, was questioned, and, on refusing to open his mouth, it was opened forcibly, and it was found that he had tied his tongue with a cord, which had caused it to be much swollen, and would probably in a short time have brought about sloughing, and possibly fatal hemorrhage. In this case the act was performed in all probability under the influence of a delusion that his tongue was an unruly member. Although not under my charge at the time of the occurrence, this man was at one time a patient of mine, and one of his delusions had reference to his tongue or speech.

It is well that nurses and attendants should know not only that the sane sometimes simulate insanity, but that the *insane* also sometimes simulate insanity, giving a curious combination of real and feigned disease, which is sufficient sometimes to baffle even a skilful expert. It is well that this should be appreciated, because it has happened to me, as well as to other physicians who are concerned with the care and treatment of the insane, that attendants, otherwise faithful and suitable for the work, become disturbed as to the existence of insanity in the patients whom they discover to be shamming in some particulars. They discover some deception, and with their little knowledge begin to think that they have solved the problem of the case better than the doctor himself.

Another similar point, which it is well, perhaps, that attendants should know, is that among the really insane hysteria in some form is often present. We have not only a form of insanity which is called hysterical, but hysteria in many forms manifests itself among the insane of different classes. I am led to remarks like these for practical reasons which have grown out of experience. I have had a faithful nurse come to me and say that a patient was hysterical; that she wished to create a sensation; that she would not hurt herself; and such statements may have had some foundation in truth; but in just such a case as this, also, I have known, within twenty-four hours of the time at which similar statements were made, the patient to almost succeed in committing suicide in a way that left no doubt for a moment even in the mind of the sceptical nurse. A nurse should not have an opinion which she puts in practice to the possible danger or detriment of the patient.

In the long run she will be safest to refer all doubts to the physician rather than to act upon them herself.

Later I will speak of the importance of cleanliness on the part of attendants, and also of the close attention which they should pay to cleanliness on the part of patients. Not only should cleanliness of body be attended to as a matter of great importance, but cleanliness of speech and of heart are essentials for nurses and attendants upon the insane. A vulgar, profane, or immoral person has no right to be in charge of an insane patient.

If I were to be asked who make the best attendants, I should say young men or women, not necessarily overlearned, but bright, intelligent, sympathetic, and sensible persons. At one of the large asylums, in answer to my inquiries, I was told that on the women's side the young, strong Irish girls, on the whole, made the best attendants, for the reasons that, as a rule, they were strong, had good animal spirits, were quick, and, at the same time, were kind-hearted. A good nurse or attendant for the insane should be firm and yet forbearing, should be quick and yet not hasty, should be courageous and yet not aggressive, should have tact and yet not be deceitful. It has often been observed in large institutions for the insane that the coming of a new nurse or set of nurses will change for a time the conduct and character of a whole ward. Order will give place to confusion, and quietness to discord. A nurse who is fussy and too demonstrative is, above all, a nuisance, particularly in public institutions. A nurse should avoid lying to or deceiving the patients under her charge. Just as in the examination of the insane an occasion may arise when a doctor will be justified in resorting to stratagem or even to deception, so it is possible that a nurse or attendant in some grave emergency or peculiar position may be justified in temporarily deceiving a patient. Such occasions are, however, exceedingly rare, and deception should never be practised when it is in any way possible to avoid it. Most insane patients, unless they be demented, are capable of recognizing deceit and dissimulation in others. The tendency of the insane mind itself is often to deceit and dissimulation, and a part of the moral or psychical treatment of the insane should be the enforcement, by example, of good moral principle. Promises which cannot be kept should not be made.

The duties of a faithful nurse or attendant upon the insane are, as a rule, arduous and wearing. Sometimes a nurse may be put in

charge of a private case—one of dementia or mild melancholia, for instance—which will give comparatively little trouble; but, on the whole, cases of insanity require great care and attention, and to be in charge of them is not to have a sinecure. In one of the large State hospitals with which I was formerly connected as consultant, the best and strongest attendants, after a year of faithful service, usually showed marked signs of physical and mental wear. The amount of service required by the regulations of some of the large asylums is, I think, too great, while, as a rule, the compensation is far too small.

The nursing and care of the insane in private practice is a matter of grave importance, and one which requires some special points of consideration. If sufficient means are at hand, some forms of insanity can be as well, or even better, treated at their own homes or in private houses than in hospitals or asylums, either private or public. Some forms of mental disorder are comparatively easy to manage at their own homes. Some, however, present peculiar difficulties. Among the cases most likely to be treated with success at their homes, with ultimate chances of recovery, are mild melancholia, common acute mania, when not too severe in character, and some forms of hysterical insanity. Some other forms of insanity, such as senile and secondary dementia, idiocy and imbecility of various grades, may be cared for at home, as a rule, without danger, although in such cases nothing is to be hoped for, so far as cure is concerned. The effort should never be made to treat patients at home, or in private houses, if such patients require constant watching, unless the friends or relatives of the patient are fully able to employ faithful attendants. The physician is often asked whether such and such members of a family cannot look after the patient. As a rule, but one not without exceptions, it is running a risk to allow a patient who is dangerous to himself or others to be attended solely by members of his family. It certainly cannot be done without great risk, if those who are supposed to have charge of the patient have other work or duties which claim their attention. When patients are so situated financially that attendants cannot be hired, or that members of the family or friends cannot give them exclusive attention, it is far better to resort to hospital or asylum care.

It will frequently happen in the private or home care of the insane that two attendants are put in charge of a patient; occasionally the number will be even greater. In all such

cases, unless the patient simply require one attendant to be in charge absolutely for a certain number of hours and the other for a like time, the physician finds it desirable to have one in chief authority. To one he consigns the chief charge, making him or her responsible to the physician, and requiring the other, when it is necessary, to act under instructions. Occasions arise, particularly in the care of the violent or suicidal insane, when it is necessary for prompt and decided action, such action as can be taken and directed by one clear head. In such a case it should be understood that the requests or even directions of the chief nurse shall be coincided with or obeyed by the other. I have known a patient to be injured, so far as efforts to control her were concerned, by the petty jealousies which have arisen between the nurses in attendance. It has seemed to me—possibly I may be mistaken with reference to this—that these jealousies are more likely to arise among women than among men. No appearance of discord or disagreement between attendants should ever be shown before a patient. Such an exhibition is in some cases destructive of all efforts to control a patient for his or her own good.

Much of the instruction which is given to those who are in charge of the insane, whether resident physician, nurses, or attendants, must necessarily have reference to the conduct, habits, and peculiarities both of patients and those in charge, and it is for this reason that I am compelled to devote so much time to the consideration of questions of this kind.

Attendants should never foolishly ridicule patients. While sometimes harmless amusement may be derived from listening to the vagaries of the insane whose delusions or notions are of a pleasant or joyous type, patients should never either be encouraged in their delusions or ridiculed because of them, or of anything else which is the result of their impaired mental condition.

In institutions nurses and attendants should be careful not to indulge in favoritism, and not to single out any patients for special antipathy. Probably nowhere in the same space can so many annoying, aggravating, and disagreeable individuals be found together as in a large insane hospital. It follows, as a matter of course, from the mental condition of the inmates, that this should be so; but the highest type of nurse or attendant is one who, appreciating all this, is able to pursue a straightforward, honorable, unbiased course in caring for the patient.

All disputes and differences of opinion

should be referred to the physician. The highest tests of the quality of a good attendant in cases of mental disorder are those tests which are exhibited in the personal characteristics of the individual. Forbearance under temptation, the ability to suppress envy, jealousy, or self in every way; the willingness to do and deny all things for the sake of the patient, furnish the best evidences of the needed qualities in such an office. The nurse who is given chief authority in the care of a private patient should not be officious or exacting, but should make it her special aim to see that the directions of the physician are implicitly carried out; should report to the physician in charge everything disagreeable and all derelictions.

In most cases the chief nurse should keep a careful record of the details of treatment, and also of the meals, amount of sleep, exercise, kind of occupation or amusement, etc. A systematic method of recording the time of administration of medicines is also advisable.

Attendants upon the insane should not become to any great extent routinists. They should not become so familiar with their patients as to forget many of the little things that they may need. The insane often suffer for want of little things, of which they need not be deprived, and of which no one cares to deprive them, but which they often do not get because of carelessness or thoughtlessness. They often suffer, for example, for water. I have been told of an intelligent lady who drank her own urine, not because of a delusion, but because of absolute uncontrollable thirst, which was not properly satisfied. Such, probably, is the case in not infrequent instances, although acts of this kind are more frequently, no doubt, due to delusions.

Sometimes the insane do not receive sufficient food. In some forms of insanity, owing to the tremendous waste of tissue which takes place in consequence of the wearing mental disorder, large quantities of food are called for. Of course, arranging of the amount of food is a matter for the physician, but nurses should see to it that the food is given when directed. As a rule, however, the insane eat too much rather than too little, and this, of course, must be guarded against.

The protection of the insane from the commission of suicide is a most important duty upon the part of an attendant. It is strange in how many ways and with how much shrewd-

ness the insane will accomplish this dire purpose if intelligent vigilance is not exercised. Suicides by the insane, like suicides by the sane, are of the most diverse character as far as method is concerned. An insane patient has been known to hang herself by a shoe-string or an apron-string to the door-knob of a room ; or the bed-cords, the sheets, clothing, etc., have been employed. To drown themselves patients do not require rivers nor even bath-tubs. They have been known successfully to accomplish this purpose by thrusting the head into a pail, or even into a basin of water. Sometimes objects are thrust by the patients into their own mouths to choke themselves or strangle themselves to death ; sometimes they cut themselves with glass obtained by breaking windows. Knives, scissors, razors, and all forms of cutting instruments should be carefully kept out of the way. The greatest possible care should be taken with reference to the custody of medicines administered to the patients. Here, again, it is advisable that those in charge should have some little practical instruction as to the strength and danger of the most potent remedies which are intrusted to their care for administration. They cannot be expected to have profound and exact knowledge as to the physiological properties, sources, etc., of morphine, conium, hydrobromate of hyoscyne, atropine, duboisia, digitalis, chloral, cannabis indica, and the long list of powerful medicinal implements which are put into their hands ; but they should know that these drugs are dangerous and deadly poison in more than a proper dose, and they should keep them out of the reach of patients in the intervals between the times of giving the doses ordered. Where possible, it is well to keep them in an adjoining room, and always under lock and key, and entirely out of reach. While, however, in the case of patients suicidally inclined, the means of suicide should be kept or put out of reach, this should not be done in a fussy or demonstrative way.

Comparatively little restraint of a mechanical kind is now used in the care of the insane. In some cases, however, rare though they be, it may be absolutely necessary to protect patients from mutilation or suicide. Mechanical restraint should not be applied by an attendant except by the direction of a physician, and, if it is used, the greatest possible care should be taken that no evil consequences result. Not long since, in a large hospital for the insane, a patient, who had been restrained by straps or cords in a bed, so dragged himself down over the side of the bed as to act-

ually cause his death by dragging on the bands.

When it becomes absolutely necessary to take hold of an insane patient, care should be exercised as to the manner in which it is done. Usually, patients requiring to be taken hold of are violent,—cases of mania, homicidal monomania, of agitated melancholia, and the like. When two attendants are present, it is well, while one secures the attention of the patient by demonstrations in front, for the other to get behind the patient, and either throw the arms around or seize both arms carefully but firmly above the elbows. Whatever plan of seizing patients is accomplished, great care should be taken not to inflict any injury. It is only in self-defence, in defence of life or limb in a great emergency, that an attendant is ever justified in roughly handling a patient. A patient, of course, may kick backwards when seized from behind, but the attendant, by slipping his feet and legs as far as possible to one side, can usually avoid being injured in this way.

When applications of heat or cold are made to the insane, special attention should be paid to them. In some forms of insanity great insensibility of the skin is present, and patients would in these cases allow blisters, mustard-plasters, stupes or fomentations, or any form of hot or counter-irritating applications to remain until serious blistering occurred. On the other hand, such patients are sometimes more impatient of such applications than the sane. The same remarks apply to the use of cold water or ice.

All physicians who are engaged in the care and treatment of the insane now recognize the importance of occupation, amusement, and educational training as therapeutic resources. To attendants the carrying out of plans of occupation, amusement, and teaching must be largely intrusted. In institutions, methods and measures for occupation, amusement, and teaching will be carefully planned and regulated if the institutions are up to the times in their management. The great curse of many institutions for the insane has been idleness. It is not within my design in the present lecture to go into the consideration of the methods and forms of employment, amusement, and instruction, but simply to give a few hints and suggestions as to the manner of carrying out the details, so far as these are in the hands of nurses and attendants.

Patients should be encouraged, and in some cases be compelled, to do that work which is called for in their own personal care. They

can be encouraged or made to take care of themselves, so far as cleanliness is concerned. Female patients should be made, when possible, to care for their own rooms, beds, etc., although attention should be paid, of course, particularly in private practice, to the question of the usual customs and habits of the patient.

No matter what may be the work at which an insane patient is engaged, whether sewing, knitting, quilting, ironing, or book-keeping, or, if a man, gardening, ploughing, brush-making, chair-making, or printing, a duty that will be incumbent upon the attendant more often than upon the physician will be to see that the patient does not overwork himself. While on the whole the tendency will be to do too little rather than too much, in some cases insane patients will rapidly and certainly overwork themselves. This is particularly the case in some forms of insanity attended with excitement, some varieties of mania, for instance, in which the patient tends to do everything to excess. Again, a patient may overwork as the result of some special delusion. Dr. Massey speaks of the case of a lady in good circumstances who, having been left with a family to support, resorted to dressmaking, but became insane and was sent to an asylum, where she was induced to go to work in the sewing-room. The result was the production of a new delusion: she believed she was in charge of the sewing-room, with large wages, and made great exertions in consequence. Becoming troublesome, she was transferred to the laundry, where the same thing was re-enacted, resulting at last in complete exhaustion and confinement to bed.*

Exercise is of the utmost importance to many insane patients. In suitable weather, out-of-door exercise should be secured. Here, again, the careful attendant will guard against the patient under-exercising on the one hand or over-exercising on the other.

Torpor of the bowels and obstinate constipation are of such frequent occurrence among the insane that both resident physicians and attendants should have their attention particularly directed to their management. In cases of melancholia, the bowels may remain constipated for days and even weeks, if the patients are neglected. A large number of insane patients in asylums, particularly many of the cases of dementia, are troubled with involuntary evacuations from the bowels or bladder, particularly at night. In private patients the same difficulty may be encountered, and it is

well for physicians and nurses to have some plan of meeting the difficulty. In one large hospital the plan adopted is a very sensible one. The physician in charge has a list of all patients who are troubled in this way, and in the evenings, before retiring, injections of warm water are given. The lower bowel is thus emptied, and a probability is that the patients will not soil their beds.

Cleanliness on the part of a nurse or attendant upon the insane is of the utmost importance. It is important not only for itself, but for the example which it sets to the patient. The insane may be made more filthy than their mental affliction would lead them to be by the example set to them by others; on the other hand, they may become cleanly in habit simply from a good example steadily set.

The bathing of insane patients is a matter of great importance both from the point of view of cleanliness and as a therapeutic agent, and attendants should be thoroughly instructed with reference to this matter. They should also have a lively appreciation of the dangers which may attend bathing. Only the other day a terrible accident occurred in one of the large asylums of a neighboring State, the patient having been literally parboiled by an attendant. As many insane patients make a great fuss and offer much resistance to bathing at all times, a careless or impatient attendant might fail to listen or assure himself of the conditions. Rigid rules are prescribed in all well-regulated public institutions. The rules for bathing which are in force at the State Hospital for the Insane, Norristown, Pennsylvania, so fully express what should be said with reference to this matter, that I will quote the most important of them:

The ward captains will personally supervise the bathing of patients, which shall not be conducted during their absence without permission.

Every patient is to be bathed immediately after admission, and once a week afterwards, unless excused by medical order. Should there be the least doubt as to the advisability of bathing any patient, owing to sickness, feebleness, or excitement, the matter should be immediately reported to the medical officer.

To provide against catching cold, the captains will see that the bath- and dressing-rooms are sufficiently warmed at bathing times; otherwise, to postpone bathing until the rooms are heated.

Any marks, bruises, wounds, sores, pain, or evidence of disease complained of by the patient, or noticed during any of the bathing operations, must be immediately reported to the physician.

During the use of the bath the room is never to be left by the attendant, except by special permission of the resident physician. When the room is not in use the door must be kept locked.

* *Penn Monthly*, 1879.

Before putting the patient into the bath observe that the water is of proper temperature. It should not be less than 88° nor above 98°.

Never turn on the hot water when the patient is in the tub.

In the bath the body of the patient is to be well cleansed with soap, and in washing the hair be careful that no soap gets into the patients' eyes. After leaving the water especial care must be taken to thoroughly dry the patients and clothe them as rapidly as possible. A separate towel must be provided for every one.

Under no pretence whatever is a patient's head to be put under water.

An attendant must not attempt under any circumstances to bathe a struggling patient alone.

Cold baths must never be given.

Neither before nor after the bath will patients be allowed to stand about unclothed.

The keys are never to be left on the bath-taps, nor are they to be used by the patients.

In conclusion, I will speak briefly of the methods of feeding patients forcibly. I do this because my remarks are intended for the instruction of resident physicians as well as of nurses and attendants. I do not believe that the latter should be allowed to have the feeding of patients in this manner under their own charge, but, as it is necessary for them to assist in performing this work, they should receive instruction as to the whole process in order that they may be better able to render assistance to the physician. In some institutions head-nurses have been allowed to administer food in this way, but it is contrary to the regulations of most institutions for the insane.

Not a few cases of insanity require at times to be fed by force. The cases in which such treatment is called for differ somewhat. In melancholia, patients will allow themselves to rapidly run down in health, or even starve to death, if the food is not promptly administered by artificial means. Sometimes cases of mania will refuse to take food, either because of their general excitement and combativeness or because of delusions. Paranoiacs or monomaniacs refuse food, if at all, because of some fixed delusion. A case of chronic alcoholic insanity, or even, in rare instances, a paretic dement, may refuse food because of a delusion, one, for instance, that the food is being poisoned by physicians, attendants, or others, or that it is a means resorted to to accomplish some purpose on the part of a persecutor. The refusal of food by the case of hysterical insanity, like the apparent attempts at suicide, is usually simply put on or resorted to for the purpose of exciting sympathy. In most cases these patients will obtain food on the sly if possible, but sometimes they will carry on the

deception sufficiently long to injure themselves if the attendants do not resort to active interference.

Various plans of feeding patients by force have been recommended at different times,—two of these are now almost universally employed; and one of the two, namely, nasal feeding, is now coming more and more into general use.

One plan is that of holding the nostrils closed and opening the mouth, or thus compelling it to be opened, while the food is quickly poured into the mouth and the patient is forced to instantaneously swallow it. A certain amount of danger accompanies this plan, which, by the way, is the one often resorted to for recalcitrant children. If any one of you should try the experiment of swallowing liquids or solids while the nose is tightly held so that no air can enter through it, he will find that it is a very difficult or almost impossible thing to accomplish. The very fact that a patient or individual whose nose is held opens the mouth in order to breathe shows the source of possible danger, which is, that the glottis being open to receive air into the lungs at the same moment that food is hastily thrust into the mouth, some of the food is likely to find its way into the wind-pipe and thus choke or strangle or partially choke or strangle the patient. This method of feeding is now not much employed.

Dr. D. Anderson Moxey* was among the first to call attention to the administration of food and medicine by the nose when they could not be given by the mouth. He resorted to this method in cases of insanity, inflamed and ulcerated sore throat, in glossitis, in deep intoxication, and in infancy, where nothing could be administered by the mouth or retained by the rectum. In his cases of insanity he fed his patients, without the use of a tube, by simply holding a small wedgwood funnel in one of the nostrils, and pouring through it the liquid or semi-solid nourishment. His method with insane patients is described as follows: After first trying to induce the patient to take the nourishment quietly and in the ordinary way, he summoned three attendants at least (four or five if they could be had), and laid the patient down on his back as quietly as possible on a low couch in the middle of the room. If there were only three attendants, one controlled the legs and the other two the arms. If a fourth was present, he attended only to the head, which was

* *The Lancet*, March 20, 1869.

held between his knees as the attendant sat on a low stool at the top of the couch. If a fifth was present, he assisted in holding down the legs. In this way the patient was completely controlled, and sometimes would yield and swallow in the usual way. Then introducing the end of the funnel gently into one of the nostrils, he poured the liquid slowly into it, pausing now and then to allow the patient to take a deep inspiration, and not allowing the food to accumulate in the funnel. A determined patient would generally be able to sputter a little of it out of his mouth. When such was the case, he poured the contents of the jug faster into the funnel, and sometimes obstructed the other nostril. In troublesome cases a medical man ought, he insisted, to invariably administer the draught, as he could alone properly judge of the extent to which it was necessary to interrupt nasal respiration. Dr. Moxey never found any serious results from this method of feeding. I have referred to these observations of Dr. Moxey to show the perfect feasibility of nasal feeding, and one of the methods of holding the patient, and that the feeding can even be accomplished without the aid of a tube, although undoubtedly this is the neater and better method.

A good tube for feeding by the nose can be made by attaching a soft Nélaton catheter to a long piece of drainage-tube of a calibre which will just allow the catheter to tightly fit into it. To the extremity of the drainage-tube a funnel of large size should be attached.

In nasal feeding some of the difficulties and dangers which are met with should be borne in mind. The number of patients who cannot be fed by the nose is very small. Occasionally, however, a patient is found whom it seems impossible to feed in this way, owing to the choking or strangling produced. This may be because of some peculiar anatomical conformation, or some special nervous idiosyncrasy on the part of the patient. The patients I refer to will choke or strangle with nasal feeding when they will not when the stomach-tube is resorted to. If, when the attempt is made to pass the well-oiled tube through the nostril, resistance is encountered, and if, after a few trials, the tube cannot be made to pass, great force should not be employed by the operator, but at once the tube should be withdrawn, and the effort made to pass it through the other nostril. In nearly all cases where special resistance is offered on one side, the tube will pass with ease upon

the other; and this in most instances is because, if hypertrophies or projections exist upon one side, there will be upon the other corresponding or compensating depressions. Sometimes, but rarely, the mucous membrane is exceedingly irritable. After the nasal tube has passed through the nostrils, it seems to have a peculiar tendency in some cases to drop into the glottis, the patient struggling and attempting to scream meanwhile. Some patients will spit or force the tube out into the mouth, and attendants can, sometimes, through the mouth, keep the tube, which has been passed through the nose, in position. Occasionally the nose is made sore by the use of the tube, but this is not likely to occur if the tube is always perfectly cleaned and well oiled. If it is of the proper kind,—that is, a soft tube,—there will be no danger of injuring the parts by breaking or perforating the mucous membrane. Indeed, one of the advantages of the nasal tube over the form of stomach-tube, or œsophageal tube, that is commonly employed, is that the danger of injury by perforation or abrasion is much less. The stomach-tube must be a little larger and of firmer make, and is likely, after a little usage, particularly if not looked after with great care, to become stiff and hard. I have heard of one instance in which the œsophagus was pierced by a stomach-tube in the hands of an unskilful attendant. In using the nasal tube great care should always be exercised to see that at least fourteen to sixteen inches of the tube have been passed before beginning the feeding. This will make it certain that the entrance to the wind-pipe has been passed. Of course care should be taken to observe that the tube has not doubled on itself, but this will not be likely to occur, or to be overlooked if it does occur.

“Whether fed with the funnel or the stomach-pump, the patient should sit up, and, if he is very obstructive, a restraining-chair will save the patient much needless muscular exertion, the physician much trouble, and diminish the chances of doing an injury. In case the œsophageal tube is passed along the floor of the nasal cavity, it is apt to encounter a resistance, and be deflected forward by a prominence which is sometimes very marked on the posterior pharyngeal wall, and which corresponds to the bodies of the cervical vertebræ. Dr. Tuke advises throwing the head of the patient back at the moment when the sound approaches the posterior nares, the tube having previously been bent a little, so as to facilitate its downward passage; then, at the

moment when it is about to glide down into the œsophagus, when there is a risk of its passing into the larynx, he advises the head to be brought forwards and downwards, so as to send the point against the posterior wall of the pharynx. After passing the upper end of the œsophagus, the tube is usually swallowed, as it were, and glides down without any further difficulty into the stomach through the action of the constrictor muscles."*

Whenever a patient is fed forcibly, care should be taken to have ample force to restrain him without violent struggle. The sight of overwhelming force will have a good moral or psychical influence over the patient. Three persons can feed a patient successfully, no matter how great the inclination to resist, if these persons are skilful and have sufficient strength. With less than three persons the difficulty will be very great, and in some cases it will be impossible successfully to accomplish the purpose. One attendant should always be charged with the task of firmly holding the head in position; another can hold the arms and hands, with the body thrown over the limbs of the patient,—before this is attempted the patient having been well enveloped in a blanket or sheet. It is better, however, to have two attendants hold the arms and legs of the patient.

After a patient has been fed the tube should be always promptly cleansed. An attendant who does not attend to this matter is derelict in duty. Hot water cannot be used because of the melting of the india-rubber, but the tubes should be washed by allowing cold water to run through them and be passed over them. Negligent attendants are likely to neglect this matter.

Whether fed by the mouth and œsophagus or through the nose, in rare instances, patients learn to vomit or regurgitate the food. If this occur, it is a matter for a physician rather than for a nurse or attendant. It has been found that the administration of morphine and hyoscyamine prior to the time of feeding will prevent the patient from exercising this power.

If the nasal mucous membrane or the mucous membrane of the throat should be unusually irritable, resort may be had to a weak solution of the hydrochlorate of cocaine, which can be painted over the mucous membrane of the nose or throat in those cases in which it could be done without too great effort.

* Insanity, its Classification, Diagnosis, and Treatment. By E. C. Spitzka, M.D.

A CONTRIBUTION TO OUR KNOWLEDGE OF FEVER, AND THE AGENTS WHICH PRODUCE OR ARREST IT.

By Drs. H. C. WOOD, E. T. REICHERT, AND HOBART A. HARE.

(Continued from page 583.)

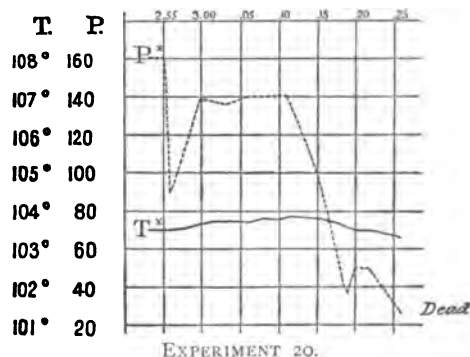
PART II.—PYREXIA.

THE fever produced by pepsin is so marked that we have been led to study closely the phenomena produced by these injections, thinking that they might throw some light upon the pathology of the febrile process. The first series of experiments were directed to determining whether the relations between the temperature of the body, the state of the pulse, and the respiration are in any way fixed or definite.

These experiments are as follows:

Experiment 20.—Dog; weight, 24 pounds. Hance Bros. & White's concentrated pepsin.

Time.	Press.	Pulse.	Resp.	Temp.	Remarks.
2.55	160	138	15	103.5°	
2.56	.....	.....	...	.....	Slowly injected 2 grammes intra-venously.
2.57.40	90	144	13	.....
2.58	80	132	...	103.5°	
3.01	140	108	20	103.7°	
3.06	142	180	24	103.7°	
3.11	140	?	36	103.8°	Respirations deep.
3.15	89	.....	...	103.8°	
3.20	50	156	23	103.5°	
3.22	52	.....	18	103.45°	At 3.26 animal died of heart failure.



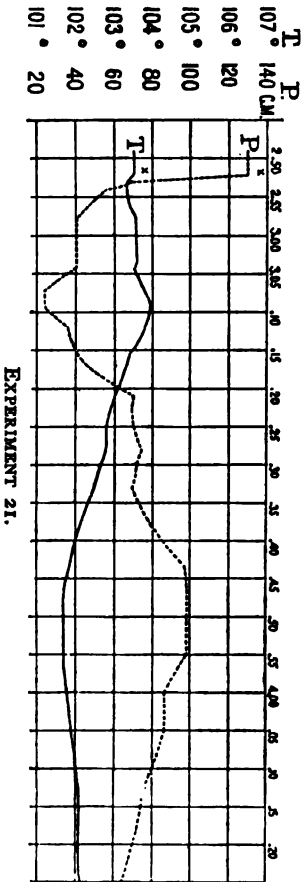
EXPERIMENT 20.

Experiment 21.—Dog; weight, 16.5 pounds.

Time.	Press.	Pulse.	Resp.	Temp.	Remarks.
2.52	150	132	4	103.5°	Injected in next 45 seconds 1.65 grms. of Hance Bros. & White's concentrated pepsin.
2.53	80	204	...	103.3°	
2.55	50	106	...	103.4°	
2.57	44	156	15	103.5°	
3.03	30	180	...	103.6°	

Time.	Press.	Pulse.	Resp.	Temp.	Remarks.
3.07	30	.....	...	103.9°	
3.15	44	.....	...	103.5°	
3.21	75	156	16	103°	
3.28	90	144	16	102.8°	
3.38	80	144	20	102.1°	
3.55	90	192	18	101.7°	
4.10	78	216	16	102°	
4.40	45	216	18	102.2°	
5.20	62	240	40	101.9°	Dog dies within 12 hours.

It will be seen in these two experiments that the pulse-rate was very distinctly increased, whilst the arterial pressure steadily fell, and the temperature either fell or was but slightly affected. The respirations were increased. In order to show to the eye the relations between these alterations, the curves have been prepared. In these the line P represents the pressure, the line T the temperature.

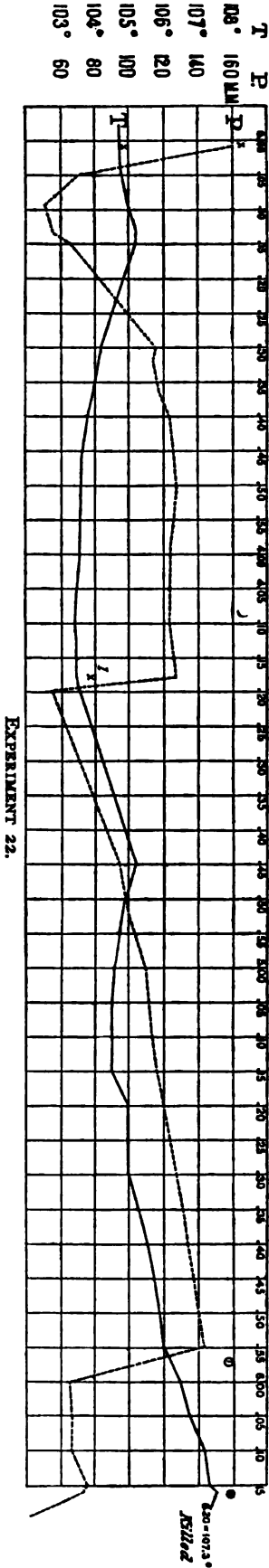


EXPERIMENT 21.

These curves certainly demonstrate that, after injections of pepsin, which either depress or do not affect the bodily temperature, there is no close relation between alterations in the general circulation and the bodily temperature.

The next two experiments were so made as to produce fever. They are as follows :

Experiment 22.—Dog.

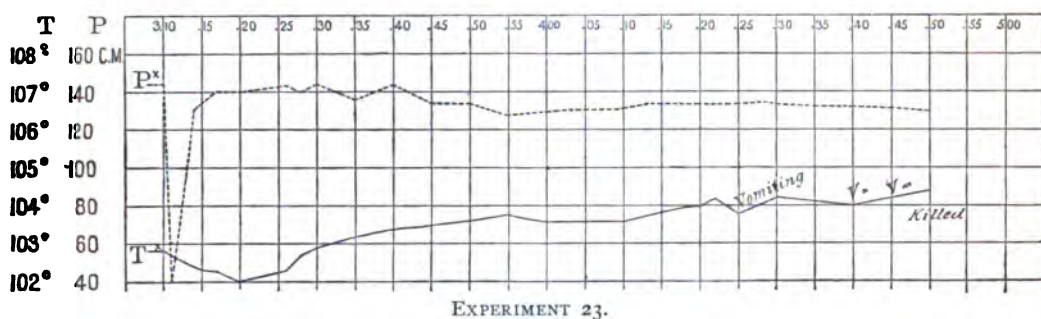


EXPERIMENT 22.

Time.	Press.	Pulse.	Temp.	Remarks.
3.01	160	156	104.7°	Slowly injected 1 gramme of concentrated pepsin.
3.05	75	216	104.8°	
3.13	60	216	105.2°	
3.30	120	180	104.2°	
3.45	122	168	103.8°	
4.10	120	170	103.5°	
4.19	.....	.....	.....	Slowly injected 0.75 gramme.
4.45	95	216	105.1°	
5.00	115	220	104.6°	
5.20	120	218	105°	
5.40	135	240	105.7°	
5.55	140	192	106°	Bled about 2 ounces.
6.00	70	252	106.7°	
6.10	70	250	107.6°	
6.20	75	288	107.3°	Dog killed.

Experiment 23.—Dog ; weight, 12.5 pounds.

Time.	Press.	Pulse.	Temp.	Remarks.
3.09	140	144	102.8°	Injected slowly 0.63 gramme.
3.10.30	40	132	102.7°	
3.17	135	108	102.3°	
3.26	142	120	102.3°	
3.30	150	132	102.9°	Very decided tremors for some minutes.
3.40	140	132	103.4°	Tremors cease.
3.50	136	156	103.6°	
4.10	138	168	103.6°	
4.20	133	156	104.0°	
4.25	130	156	103.9°	Vomiting.
4.30	130	168	104.1°	
4.50	130	168	104.2°	Dog killed.

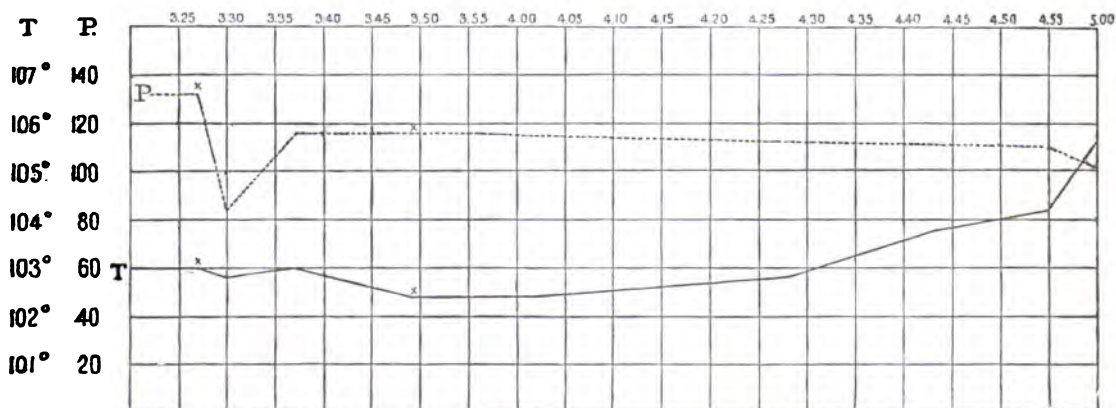


Unfortunately, in these experiments we failed to note the respirations; but, as with the previous experiment, the pulse-rate rose and the arterial pressure fell, and yet the temperature rose. In Experiment 22 the rise of temperature, considering the animal employed, was very decided.

The following curve expresses the results obtained in an experiment (Experiment 24), whose detail we do not give.

In order to show more clearly the total lack of connection between the circulation and the temperature in ordinary cases of

fever, we here insert some experiments which we have made with antipyretics, especially with the drug antipyrin. In three or four experiments upon uninjured normal dogs we have found that this drug sometimes notably depresses the temperature even when given in doses not distinctly toxic. We now give the records of three experiments so made as to show simultaneously the influence of antipyrin upon animal temperature and upon arterial pressure, two of the experiments being upon normal animals and one upon an animal having a pepsin fever.



Experiment 25.—Antipyrin alone. Weight of dog, 6 pounds. No pepsin given. Effects of antipyrin on normal temperature and blood-pressure.

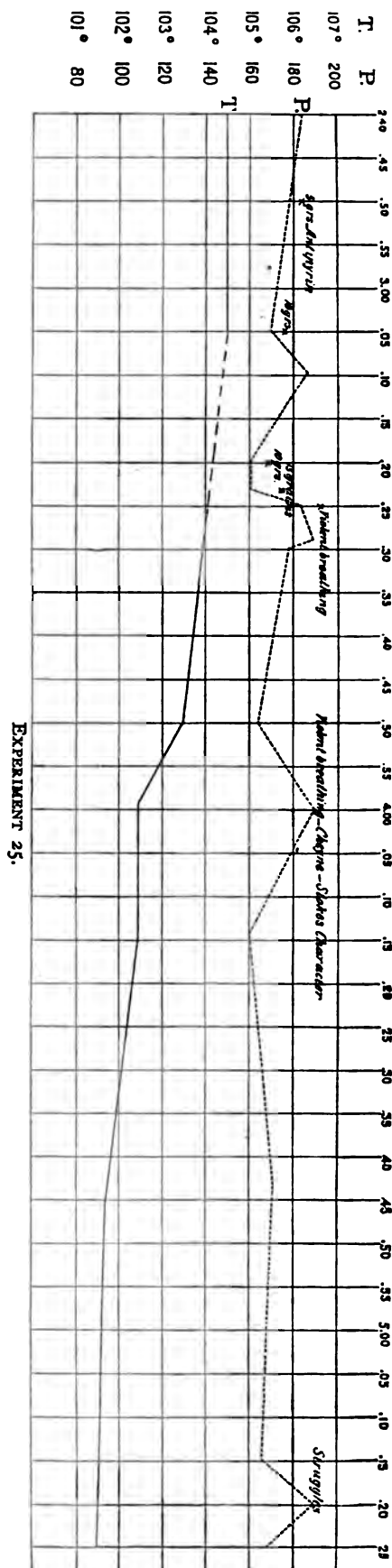
Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
2.35	194	.....	104.5°	
2.40	170-194	.....	.....
2.45	5 grms.	180	.....	.....
2.46	170-190	.....	.....
2.47	170-190	.....	.....
3.05	10 grms.	168-170	.....	.....
3.06	Lost blood.
3.07	186-188	.....	.....
3.19.50	160.162	.....	.....
3.20	10 grms.	160-164	.....	.....
3.22.50	160	.....	.....
3.23	15 grms.	160	.....	.....
3.25	180-190	.....	.....	Violent breathing.
3.27	180-196	.....	.....
3.30	178-180	.....	.....
3.50	160-170	.....	103.5°	Stopped breathing for 1 or 2 minutes, then began to breathe hurriedly and slightly.
4.	190-192	.....	102.5°	
4.15	160	.....	102.5°	Breathing in paroxysms arrested for 10 to 20 seconds, then breathing fast and strong for 3 to 10 seconds.
4.30	160-164	.....	102.1°	
4.45	170-180	.....	101.7°	
5.15	164-170	.....	.....	Breathing a little improved.
5.20	180-200	.....	.....	Struggling.
5.25	170-180	.....	101.5°	Dog when untied strong and lively.

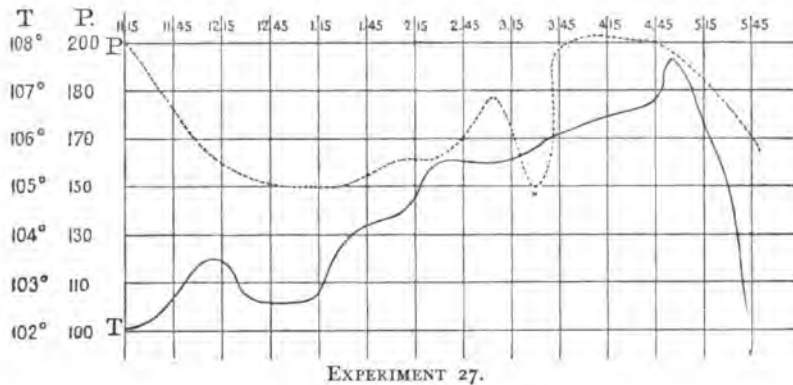
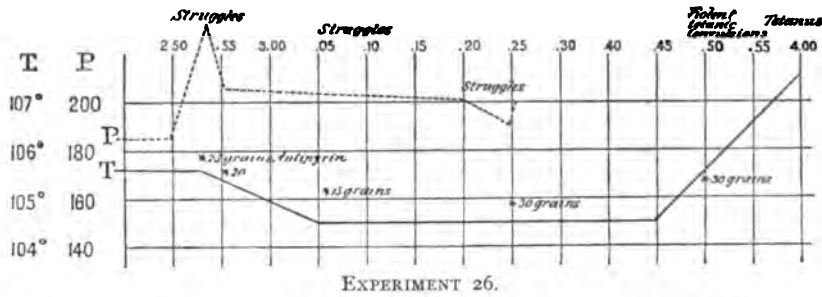
Experiment 26.—Bull-dog; weight, 30 pounds. Effects of antipyrin on normal temperature and pressure.

Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
P.M.					
2.50	.....	180-190	150	105.3°	Has been struggling.
2.53	25 grms.	184-190	150	.....
2.53.02	.....	220-244	not countable.	.....	Tracing irregular; dog struggling.
2.55	.....	210-220	120	.....
2.55.10	20 grms.	195-220	110-120	.....	Struggling.
3.05	.....	200-210	180	104.5°	
3.06	15 grms.	196-200	180	.....
3.06.02	.....	.....	.....	.....	Struggling.
3.20	.....	200	200	.....
3.25	30 grms.	180-200	180	.....
3.25.02	.....	200	120	.....	Struggling.
3.45	.....	.....	.....	105°	
3.50	30 grms.	.....	.....	.....	Violent tetanic convulsions.
4.	.....	.....	.....	107.3°	Tetanus.
4.	Dog in perpetual violent tetanus. Excessively rigid opisthotonos. Unusually hurried breathing. Dilated pupils. Lies on side. Conscious. Handling causes violent general convulsion.				
5.	Tetanus replaced at intervals by wildly excessive and very frequent clonic convulsions. Lies on side and moves legs with unusual rapidity, as if running.				

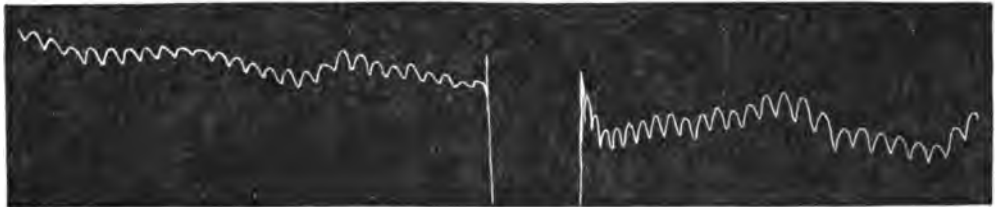
Experiment 27.—Pepsin and Antipyrin. Cur; weight, 30 pounds. Filtrate from boiled pepsin used.

Time.	Drug.	Press.	Pulse.	Temp.
11.15	.....	196-200	84-86	102.2°
11.16	4 grms. pepsin.	.....	.....	.....
12.08	4 grms. pepsin.	160-174	.....	103.5°





R. T. 107.7°
R. T. 102.3°



Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
12.17	4 grms. pepsin.	160	150	.....
12.19	3 grms. pepsin.	160-164	180	.....
12.20	102.8°	
1.	Clots.	Clots.	.....
1.05	140-150	.....	102.5°	
1.30	150	.....	104°	
2.	160	186	104.4°	
2.30	150-160	132	105.5°	
3.	170-190	130	105.5°	
3.30	140-160	138	105.7°	
3.40?	anti-pyridin, either 20 or 30 grms.	200	.....	.....	Amount of antipyrin is somewhat doubtful here.
4.45	200	132	106.7°	Breathing convulsive.
4.55	107.7°	Dog quiet.
5.40	160	138	102.3°	Quiet.
5.41	Killed dog.

Dog struggling violently ever since injection.

Comparing these three experiments with those previously given, the conclusion is inevitable that the temperature of the animal, after the injection of the pepsin, is indepen-

dent of pulse-rate, the arterial pressure, and the rapidity of the respirations.

As a further proof of this entire independence of the blood-pressure and the temperature we give the above tracing. The temperature in a dog (Experiment 28) had been elevated to 107.7° F., at which time the arterial pressure was 170 : antipyrin was injected into the jugular vein, and the motion of the kymographion arrested for forty-five minutes, at the end of which time the temperature had fallen to 102.3° F.: nevertheless, the blood-pressure stood at 164, almost where it had been before the falling of the bodily temperature.

The next step in the investigation was to determine the course of heat production and heat dissipation. A series of experiments were performed with a calorimeter similar to that used by Dr. H. C. Wood in his researches on fever. It does not seem necessary to encumber the present article with the details of

these experiments, but the results obtained are given in the following records, the calculations all being made according to the method of the above investigator.

Experiment 29.—A fat pup; weight, 19.5 pounds.

Time.	Rec. temp.	Cal. temp.
8.40	104.6°	63.8°
10.40	104.2°	65.57°

1.77°

11.10 4 grammes concentrated pepsin into jugular vein.

Time.	Rec. temp.	Cal. temp.
11.40	105.4°	.....
12.15	105.4°	65.25°
12.15	105°	66.33°

1.10°

Dog has bloody mucous discharges from rectum; very sick.

Time.	Rec. temp.	Cal. temp.
2.30	105°	66.33°
4.30	102.30°	67.43°
		1.10°

Dog very sick and feeble; died during the night.

RESULTS.

Hourly heat dissipation.....	107.97
Hourly heat production.....	105
Hourly heat dissipation.....	91.98
Hourly heat production.....	93.00
Hourly heat dissipation.....	67.1
Hourly heat production.....	47.31

Experiment 30.—Dog; weight, 19 pounds.

Time.	Rec. temp.	Cal. temp.
8.45	102.6°	60.37°
10.45	102.4°	62.6°

2.23°

11.15 Injected 4 grammes concentrated pepsin.

Time.	Rec. temp.	Cal. temp.
12.5	101.2°	61.72°
1.5	.....	62.84°
2.35	104.4	64.51°

2.79°

Dog vomited in box.

Time.	Rec. temp.	Cal. temp.
3.10	104.4°	64.22°
4.10	.....	65.29°
5.10	.....	66.29°
5.40	104.2°	66.68°

2.46°

Time.	Rec. temp.	Cal. temp.
8.40	102.4°	67.16°
9.40	.....	68.12°
10.10	102.2°	68.54°

1.38°

RESULTS.

Hourly dissipation of heat.....	136.03
Hourly production of heat.....	134.88
Hourly dissipation of heat.....	136.152
Hourly production of heat.....	154.312
Hourly dissipation of heat.....	120.995
Hourly production of heat.....	120.048
Hourly dissipation of heat.....	113.652
Hourly production of heat.....	112.24

Experiment 31.—Terrier; weight, 16 pounds.

Time.	Rec. temp.	Cal. temp.
8.30	102.5°	60.93°
10.30	102.5°	62.13°

1.20°

11.50 Injected 4 grammes of concentrated pepsin.

Time.	Rec. temp.	Cal. temp.
12.10	103°	61.85°
1.40	100.8°	62.7°
		.85°

Time.	Rec. temp.	Cal. temp.
1.55	100.8°	62.6°
3.25	106.7°	63.23°
		.63°

Time.	Rec. temp.	Cal. temp.
3.42	106.7°	63.4°
5.03	105.3°	64.3°
		.9°

RESULTS.

Hourly dissipation of heat.....	73.2
Hourly production of heat.....	73.2
Hourly dissipation of heat.....	79.12
Hourly production of heat.....	63.92
Hourly dissipation of heat.....	51.24
Hourly production of heat.....	97.54
Hourly dissipation of heat.....	82.35
Hourly production of heat.....	72.27

Experiment 32.—Dog; weight, 6½ pounds.

Time.	Rec. temp.	Cal. temp.
9.00	103.4°	62.88°
11.00	102.4°	64.78°
		1.90°

Time.	Rec. temp.	Cal. temp.
11.50	Injected 1 gramme of concentrated pepsin.	
12.25	102.4°	64.66°
2.25	105.4°	66.4°
		1.86°

Time.	Rec. temp.	Cal. temp.
2.50	105.4°	66.45°
4.50	103.6°	68.36°
		1.91°

RESULTS.

Hourly dissipation of heat.....	71.78
Hourly production of heat.....	69.33

Hourly dissipation of heat.....	70.2801
Hourly production of heat.....	77.57
Hourly dissipation of heat.....	72.1693
Hourly production of heat.....	67.7593

Experiment 33.—Dog ; weight, 13 pounds.

Time.	Rec. temp.	Cal. temp.
12.40	101.8°	88.4°
1.40	102.2°	95.8°
2.10	4 grammes of pepsin concentrated. Dog in a few minutes became very ill; whining expiration; dilated pupils.	

Time.	Rec. temp.	Cal. temp.
2.35	102.5°	60.6°
4.35	99.2°	61.6°
		1°

Time.	Rec. temp.	Cal. temp.
5.05	99.2°	62.0°
7.20	99.2°	63.1°
		1.1°

Time.	Rec. temp.	Cal. temp.
7.35	99.2°	63.3°
8.50	99.4°	64.1°
		0.8°

Dog excessively ill; died during next twenty-four hours.

RESULTS.

Hourly dissipation of heat.....	73.2
Hourly production of heat.....	77.1
Hourly dissipation of heat.....	61
Hourly production of heat.....	45.92
Hourly dissipation of heat.....	67.1
Hourly production of heat.....	67.1
Hourly dissipation of heat.....	78.08
Hourly production of heat.....	77.92

Experiment 34.—Dog ; weight, 35 pounds.

Time.	Rec. temp.	Cal. temp.
10.57	101.6°	70.26°
12.27	101.2°	72.22°
		1.96°

12.40 4 grms. concentrated pepsin.

Time.	Rec. temp.	Cal. temp.
1.35	101.2°	72.32°
3.35	105.4°	74.22°
		1.90°

Time.	Rec. temp.	Cal. temp.
4.05	105.4°	74.38°
6.05	103°	76.38°
		2.00°

Time.	Rec. temp.	Cal. temp.
6.25	103°	76.28°
8.25	101.8°	77.72°
		1.44°

The tabulated results of these experiments are as follows (see table on p. 672) :

RESULTS.

Hourly dissipation of heat.....	159.42
Hourly production of heat.....	152.30
Hourly dissipation of heat.....	115.9
Hourly production of heat.....	171.025
Hourly dissipation of heat.....	122
Hourly production of heat.....	90.55
Hourly dissipation of heat.....	87.84
Hourly production of heat.....	62.09

It has occurred to us that the results of these experiments might graphically be represented, and their lessons thereby be conveyed more forcibly to the mind. If on paper ruled horizontally with equally distant lines the space between the lines be considered to represent one degree of bodily temperature, then, so far as heat production and heat dissipation are concerned, such space will represent the number of heat units required to raise the body of the animal one degree of temperature: thus, suppose in a ruled sheet the successive distances between the lines A, A', A'', represent 1° F. for an animal weighing six and a half pounds, and having a specific heat of 0.75, then the value of the spaces between A, A', A'', will each be five units of heat.

If across the horizontal lines in such a plate a series of vertical lines be projected at intervals, and taken to represent each hour of the experiment, it is easy to construct three curves,—one of bodily temperature, one of heat dissipation, and one of heat production. If such curves be correct, the one representing temperature should be exactly related to the others.*

This relation should be, that when the temperature rises, the hourly increase of heat production added to the hourly decrease of heat dissipation and multiplied by the number of hours should give the height of the temperature curve. Perhaps this may be more clearly expressed algebraically. Let t represent the height of the temperature curve, ip hourly increase of heat production, dd hourly

* In practice, for convenience' sake in making these curves strict accuracy has been by us abandoned. The weights of the various animals are such that only occasionally does the space between the lines represent an even number of heat units, and we have found it better to consider them to represent the nearest even number than to retain the fractions. The departure from accuracy is not sufficient to affect perceptibly the general relations of the curves, but comes out when accurate measurements are made.

Experiments.	Time.	Weight.	Drug.	Temperature.	Hourly dissipation of heat.						Hourly production of heat.				Remarks.
					Normal.	After Injection.	Increase.	Decrease.	Percentage of decrease.	Normal.	After Injection.	Increase.	Decrease.	Percentage of decrease.	
29	8.40 to 10.40 A.M. (2 hours). 12.15 to 2.15 P.M. (2 hours). 2.30 to 4.30 P.M. (2 hours).	19.5 pounds.	4 grms. pepain 11.10 A.M.	104.6° to 104.2° 105.4° to 105° 105° to 102.3°	107.97	91.98 67.1		35.99 48.87		105	93.90 47.1		31.10 58.7		Dog died. Dog had a running sore on back; very ill after injection, with bloody diarrhoea, etc.
30	8.45 to 10.45 A.M. (2 hours). 12.5 to 2.35 P.M. (2 hours). 3.10 to 5.40 P.M. (2 hours). 8.40 to 10.10 P.M. (2 hours).	19 pounds.	4 grms. pepain 11.15 A.M.	102.6° to 102.4° 101.2° to 104.4° 104.4° to 104.2° 102.4° to 102.2°	136.03	136.152 120.995 113.652		0.122 15.035 22.378		134.88	154.31 120.048 112.24	20.23 14.82 22.64			
31	8.30 to 10.30 A.M. (2 hours). 12.10 to 1.40 P.M. (1½ hours). 1.55 to 3.25 P.M. (1½ hours). 3.45 to 5.02 P.M. (1½ hours).	16 pounds.	4 grms. pepain 11.50 A.M.	102.5° 103° to 100.8° 100.8° to 106.7° 106.7° to 105.3°	73.2	79.12 51.24 82.35	6.12 9.15			73.2	63.92 97.54 72.27		9.38 24.34 0.93		
32	9 to 11 A.M. (2 hours). 12.25 to 2.25 P.M. (2 hours). 2.50 to 4.50 P.M. (2 hours).	6½ pounds.	1 grm. pepain 11.50 A.M.	103.4° to 102.4° 102.4° to 105.4° 105.4° to 103.6°	71.78	70.2801 72.1693	1.389	1.50		69.33	77.57 67.76	8.24			
33	12.40 to 1.40 P.M. (1 hour). 2.35 to 4.35 (2 hours). 5.05 to 7.20 P.M. (2.25 hours). 7.35 to 8.50 P.M. (1.25 hours).	13 pounds.	4 grms. pepain. 2.10 P.M.	101.8° to 102.2° 102.2° to 99.2° 99.2° to 99.2° 99.2° to 99.4°	73.2	61 67.1 78.08		12.2 6.1		77.1	45.91 67.1 77.92		31.18 10.00 0.82		Dog was very ill from first injection; died within 24 hours.
34	10.57 A.M. to 12.27 P.M. (2 hours). 1.35 to 3.35 P.M. (2 hours). 4.05 to 6.05 P.M. (2 hours). 6.25 to 8.25 P.M. (2 hours).	35 pounds.	4 grms. pepain.	101.6° to 101.2° 101.2° to 101.4° 105.6° to 103° 103° to 101.8°	159.42	115.9 122 87.84		43.52 37.48 71.58		152.30	171.025 90.55 62.09	18.728			

decrease of heat dissipation; then, for an experiment lasting two hours,

$$t = 2 (ip + id).$$

because the hourly increment of temperature must be the gain of heat production plus the loss of heat dissipation. If it so happen that heat dissipation is increased instead of decreased, then such increase must be subtracted from the increase of heat production, and the formula becomes (*id* being taken as the symbol for increased dissipation) $t = 2 (ip - id)$. If the temperature of an animal falls during an experiment, such fall can only be due to increase in dissipation, or lessening in heat production, or to a combination of these changes. Of course, bodily temperature might fall when there was an absolute increase of heat production, provided such increase was overcome by a greater increase of heat dissipation. Taking *t* as fall of bodily temperature, *dp* as decreased heat production per hour, express the height of a curve of two hours, $t = 2 (dp + id)$ or $t = 2 (id - ip)$ or $t = 2 (dp + dd)$.

In applying these equations to test the accompanying curves, it must be remembered that the equations are based upon the suppositions that immediately before the occurrence of the changes of temperature under consideration the heat production and heat dissipation were so balanced that the temperature of the body was at rest.

If, in any experiment, the bodily temperature was falling or rising before the change of temperature under discussion, then allowance must be made for such previous inequality.

In examining these curves, or the results as given in the tables, the most prominent fact, the one which naturally first attracts attention, is that there is no fixed relation between the temperature of the body and the rate either of heat production or heat dissipation, or, in other words, that fever may exist with a lessened heat production, and that the bodily temperature is decided by the relation between the two functions of heat production and heat dissipation.

In all of the experiments in which there was a decided fever, during the coming on of that fever—*i.e.*, in the earlier hours of the paroxysm—heat production was increased, whilst heat dissipation was lessened. Another point worthy of notice is that in Experiment 30 the injection of pepsin was followed by a persistent fall of temperature, which was produced by a conjoined decrease of heat production and increase of heat dissipation.

This phenomenon shows most clearly the derangement of the relations of heat dissipation and heat production produced by pyrogenic agents, for in health decreased heat production provokes decreased heat dissipation, and *vice versa*.

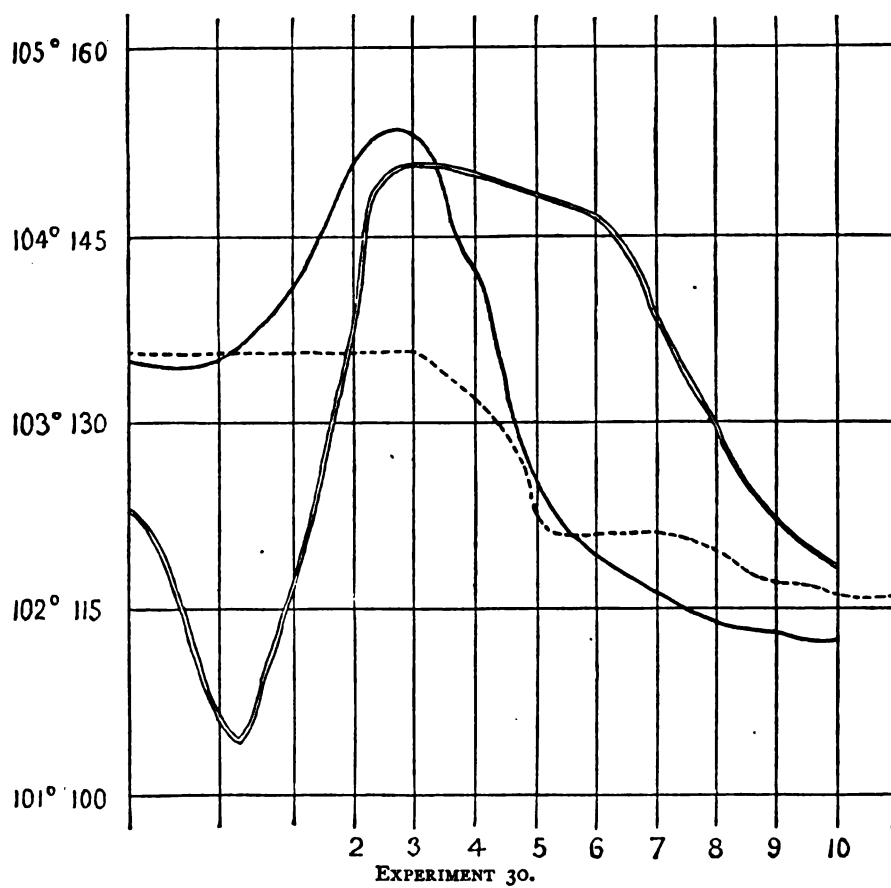
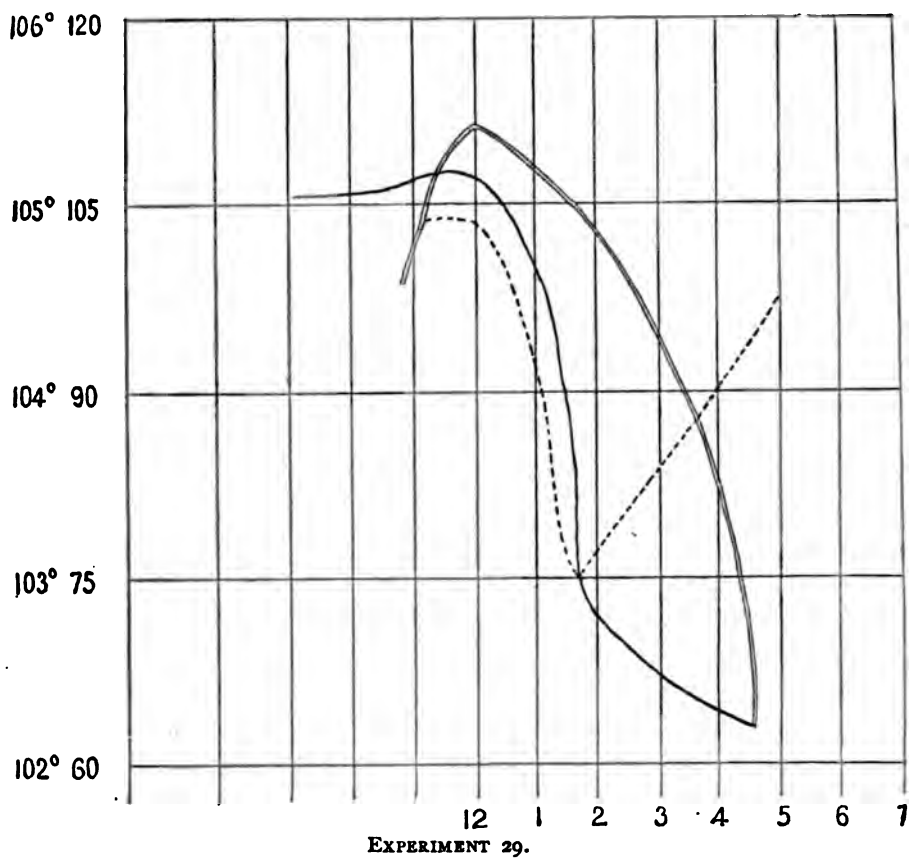
In Experiment 31 the access of fever was preceded by a decided fall of temperature, which fall was caused by an increase of heat dissipation and lessening of heat production.

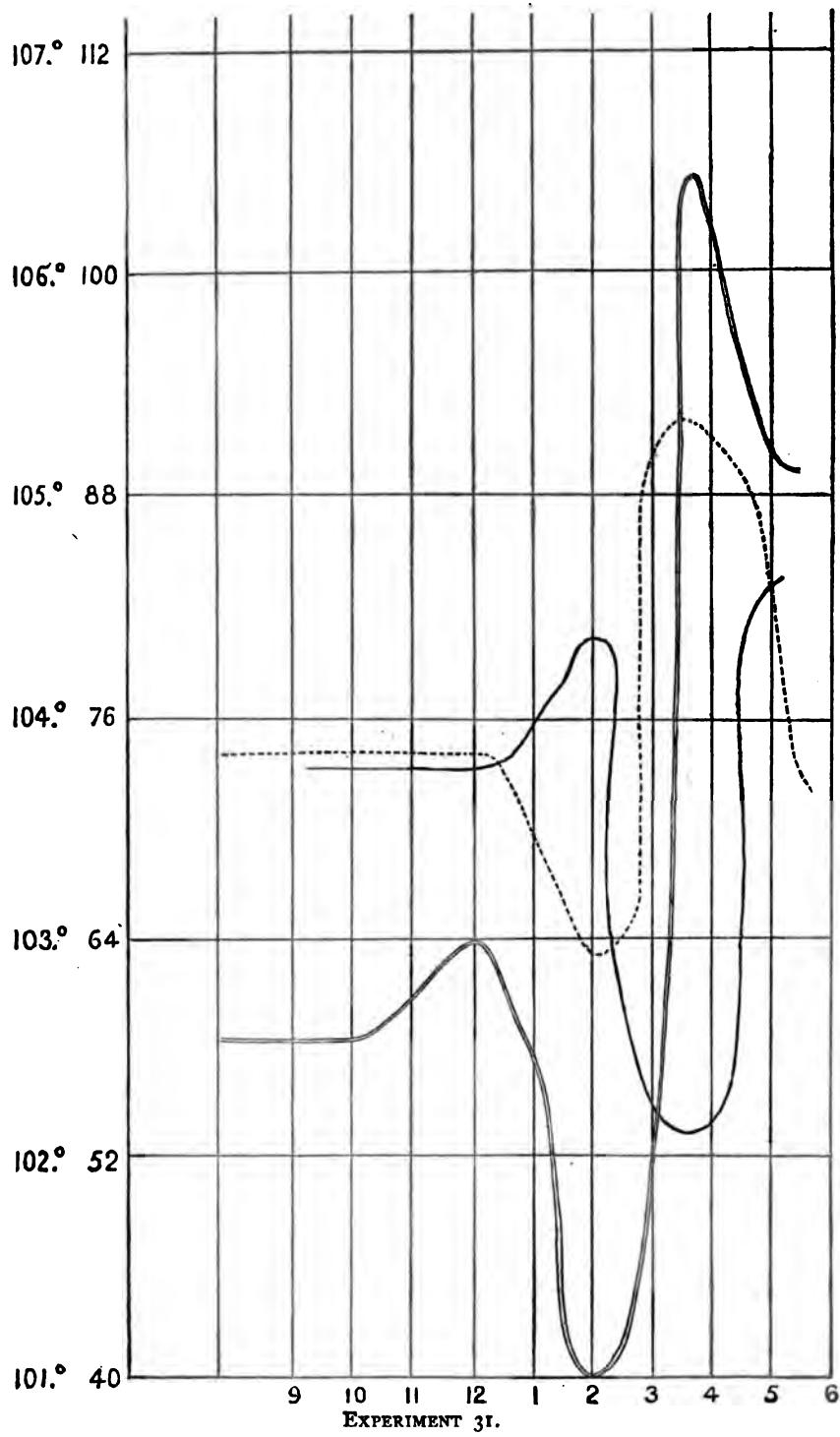
There was a distinct defervescence in only three of these experiments. In Experiment 29 it was caused by an enormous fall in the rate of heat production. In Experiment 32 it was the result of a consentaneous increase of heat dissipation and decrease of heat production. In Experiment 34, as in Experiment 29, it was due to excessively decreased heat production.*

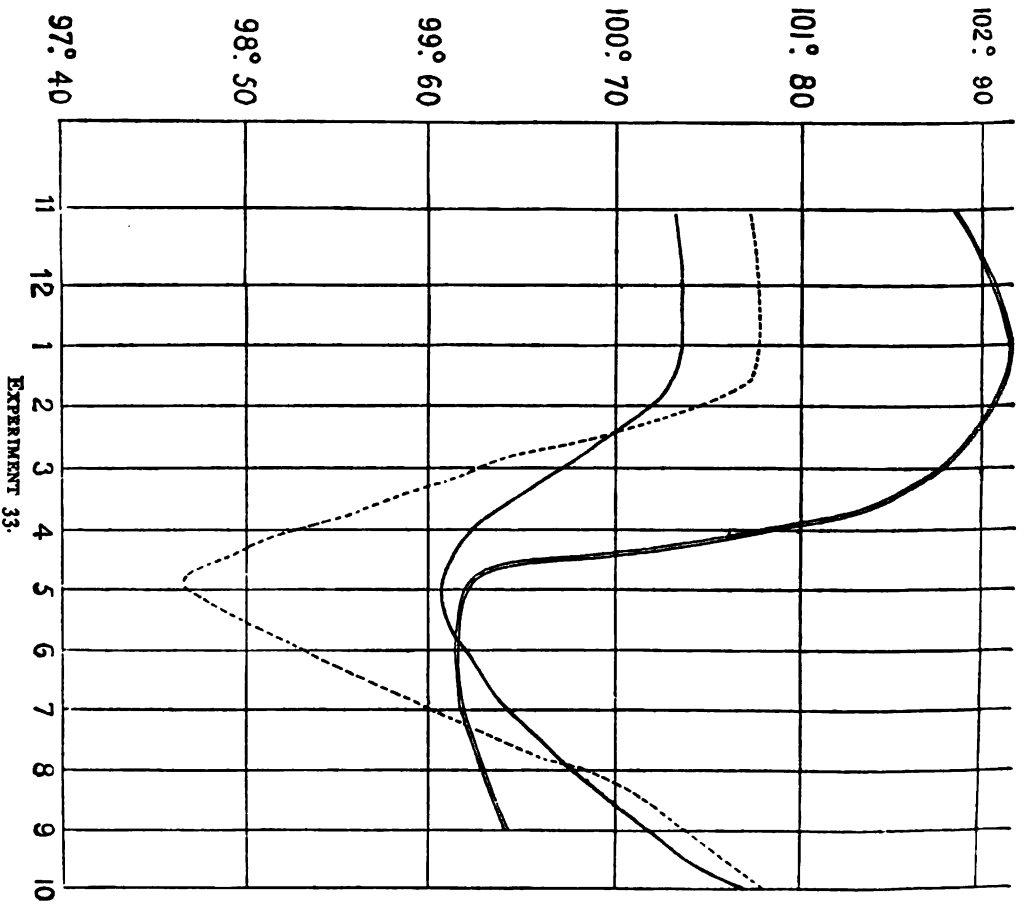
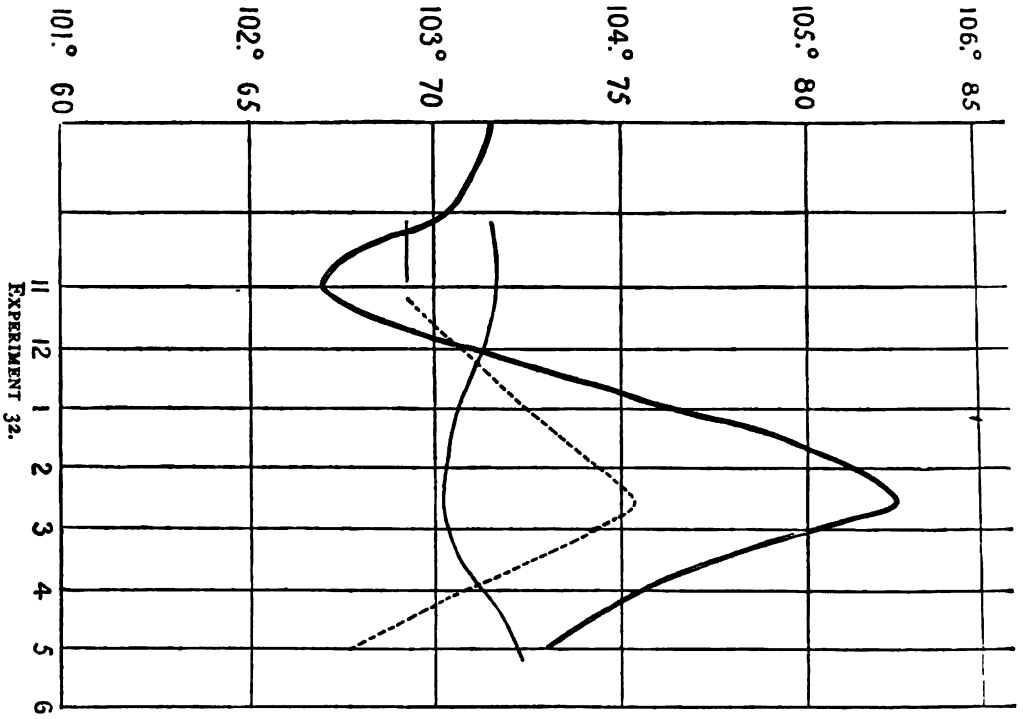
These experiments would seem to show that in the course of a febrile paroxysm of sudden acute fever preceded by a fall of temperature and lasting but a few hours, there is primarily an increase of heat dissipation and a lessening of heat production; that during the subsequent rise of temperature there is an increase of heat production and a decrease of heat dissipation until the maximum temperature or near it is reached, and then for a time these functions are variously performed, the relations between them being, however, such as to maintain the bodily temperature; and finally, that when sudden rapid defervescence occurs, it is usually chiefly due to a fall in the heat production, although sometimes heat dissipation is also increased. The curves of a typical acute paroxysm of fever would therefore be something like the following.

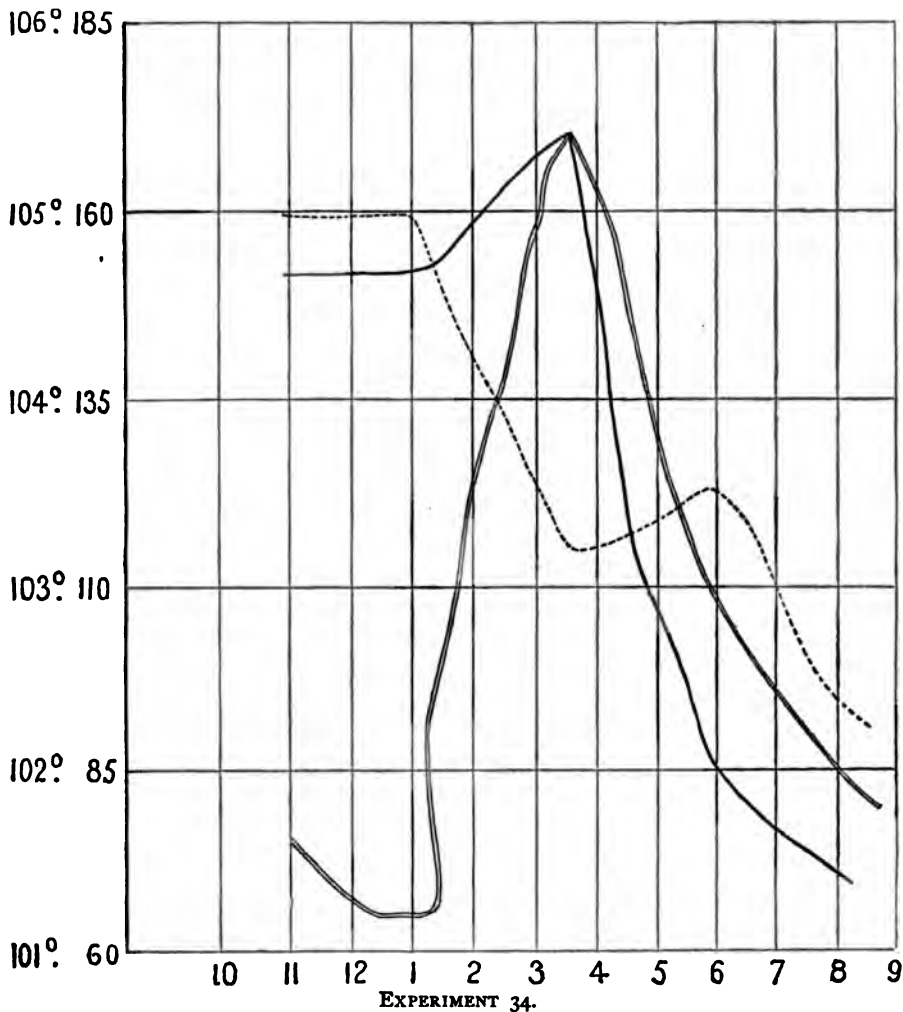
An examination of the various curves which we have given will, according to our thinking, demonstrate the correctness of the view that fever is of nervous origin. As fever is accompanied by increased production of animal heat, the pyrogenic agent of the pepsin solution could act in producing the fever only in one of three ways,—either by causing nutritive changes in the blood so rapid as to increase distinctly the production of animal heat, or by provoking similar chemical reactions in the solid tissues themselves through an influence exerted directly upon the tissues, or by affecting the nerve-centres, and thereby influencing the chemical movement of the tissues, either directly or through the medium of

* The smallness of the figures involved is due to the very small size of the dog.



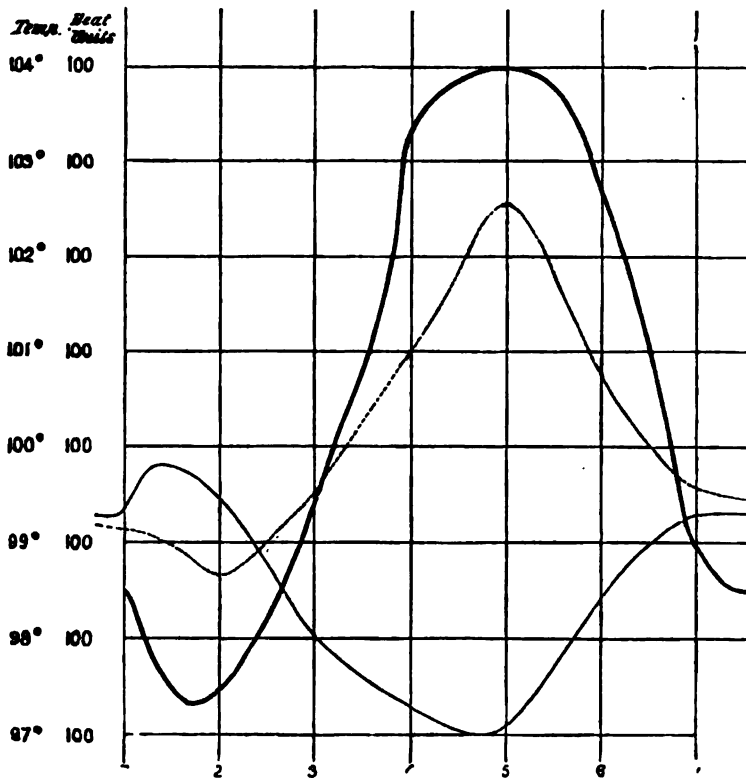






the circulation. The functions of heat production and heat dissipation in the normal organism are so closely related, one to the other, that any alteration of one is followed by a compensating alteration of the other. If heat dissipation be increased heat production is also increased to make good the loss, but if heat dissipation be decreased heat production is decreased; and, on the other hand, when heat production is increased heat dissipation is also increased, and *vice versa*. In this way the bodily temperature in health maintained at a steady level. It is not conceivable that a substance which acts simply upon the blood, or the tissues directly, should, by virtue of such action, alter the normal relations between heat dissipation and heat production. Therefore, if by a direct action upon blood or upon the solid tissues an excess of heat production is caused, such excess should be accompanied by a rise of the dissipation of heat, and the elevation of temperature could only

be produced by the increase of the heat dissipation not being able to keep pace with the increase of heat production. It will be seen, however, in looking at our curves, that the normal relations between heat dissipation and heat production are often reversed under the influence of the pepsin pyrogenic agent, so that, on the one hand, when in the beginning of the paroxysm heat production falls, heat dissipation is increased; and, on the other hand, during the height of the fever, the heat production rises, while the heat dissipation falls. This, we believe, proves that the fever is the result of a disturbance of the nervous system. Further, the various experiments which we have detailed prove that the fever is entirely independent of the arterial pressure, since normal arterial pressure may co-exist with high or low temperature, and there is no corresponding rise or fall of arterial pressure with the variations of the temperature in the febrile state. If the increased



heat production were the result of the dilatation of the capillaries of the muscular system, where most of the heat of the body is believed to be produced, such dilatation would probably affect the general blood-pressure, and we therefore believe that our researches corroborate the theory reached in the work of Dr. H. C. Wood, that there are nerve-centres which are directly concerned in the thermogenic functions, and which affect the production of animal heat, independently of the circulation, by a direct action upon the tissues.

(To be continued.)

"PASTEURIZATION" FOR RABIES.

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INSUSCEPTIBILITY to toxic and septic influences as a sequel to inoculation is by no means new either in theory or practice. Since was first derived from the Levant the knowledge that an inoculated *variola* limited the fatality and ravages of *smallpox*, the principle has been applied to a wide range of maladies with varying results. It has long been understood by pathologists that there are degrees of correlation among all septic poisons, but the attempt to define a common

law therefor has not been attended with gratifying success.

More than a quarter of a century gone, De Humboldt, after a vast series of inoculations, imagined he had demonstrated a mutual prophylaxis existing between the venom of reptiles and the sepsis of that dread scourge of the tropics,—*el vomito*;* so, too, may be cited the more recent claims of Ferran, of Valencia, regarding cholera, or the assumed discoveries of De Freire, of Pernambuco, in yellow fever; all of which were better based, theoretically, and productive of far more brilliant results, than has ever accrued to the rabic researches of M. Louis Pasteur, and all of which also, under segregation and careful control investigation, have been disproved. The error appears to have been the common one of mistaking *coincidences* for *facts*; and no student in the physiological laboratory need be told that the law of coincidences is much more general in operation than has ever been surmised, and beyond all power of the human mind to grasp. Unfortunately for Pasteur also, his obstinate rejection of all forms of control experiment render his rabic labors wholly nugatory in the eyes of candid

* Proceedings of the Royal Academy of Medicine of Havana, Cuba, 1852.

and thinking scientists, and hence not a single pathologist or physiologist of note or established reputation is found giving adherence thereto! Apparently he is wholly ignorant of that most trite of scientific aphorisms: "*By the Negative alone is the real value of the Positive demonstrated!*" Again, his secret and empirical methods; his hasty assumptions and illogical conclusions; his arrogance and impatience of restraint or correction; and above all his neglect and disparagement of the labors of others while yet appropriating their results as original with himself,—all have tended to earn for him the enmity of the ablest scientists of Europe, and caused his utterances to be regarded with suspicion. Even the ablest of his own countrymen do not hesitate (and I believe unjustly) to accuse him of fostering evil to the most base of personal ends!

Diseases to which inoculatory prophylaxis is applicable are those only which have their inception in some foreign and extraneous organism that, by one accession, secures more or less immunity from subsequent invasions; and this organism, whether *bacterium*, *micrococcus*, or "degraded form of bioplasm," demands some knowledge of its characteristics, including physiology and natural history, ere practical and intelligent application can be made thereof. Whether the malady popularly known as *hydrophobia*,* but correctly speaking, *rabies*, possesses such organism, is a widely-mooted question: it has been the problem of centuries to the solution of which the ablest physiologists and scientists the world over have brought time, patience, energy, perseverance, and skill to bear in vain,—the "microbe theory" yet awaits the discovery of the microbes. The prevalent belief, however, is that the rabic virus does harbor a germ or organism that expends its force and energies in some mysterious and occult manner upon the central system to its derangement and exhaustion. Democritus, four hundred years prior to the Christian era, declared the "great nervous system" to be the seat of the malady, and from his time down to the present definite pathological changes in the brain and spinal cord have been sought in vain. Though discoveries have been heralded and claimed from time to time, none have withstood the test of calm, dispassionate, scientific inquiry; all have been conclusively

proven spurious, imaginary, or no way specific of the disease. *There are no post-mortem evidences in either animal or human whereby a rabies may be positively defined!*

Pasteur's earlier announcements regarding rabies, though pertinaciously put forward and asseverated, differ very materially from later theories. They include the "Discovery of a specific microbe," "New evidences regarding the communicability of rabies by the blood," and "A new theory involving the central nervous system."† He angrily and acrimoniously repudiated convincing evidence brought by his colleagues to show that the microbe described was neither new nor specific. He revamped as original and new the ideas that have made the name of Hertwig famous among pathologists, at the same time appropriating those more recent of Raynaud and Lannelongue (members of the same Academy), and finally advanced as original a theory regarding the nerve-centres and rabies so ancient that Benjamin Rush speaks of it as "old" in his day.‡

Next§ we find him appropriating the exploded theory of Davaine that the general nervous system is the channel bearing the virus to its goal,—the great nerve-centres; for which the author thereof enters the lists against him, questioning alike his integrity and ability. At this time also Pasteur professedly obtained rabic virus "*in perfect purity in the brain*," with which he secured the rabic condition "*promptly and surely*" in the creatures inoculated therewith; yet a little later it is the "*spinal cord alone*," he asserts, that is the source of the poison.

Aside from the pathological objections to the foregoing and the contradictions, Pasteur himself furnishes the best evidence of its ridiculous character in that he declares many of the creatures so experimented upon "*recovered spontaneously*," while others "*recovered and relapsed*," which, it is hardly necessary to remark, is utterly impossible of true rabies, and disproved by such evidence as Hertwig, Eichborn, Marx, Schaller, Virchow, Bollinger, Bruckmuller, Bouley, Fleming, Galtier, and other much more able and candid investigators than he. Pasteur speaks definitely also of "*rage muet*," "*rage furieuse*," and "*rage dite*

* The word *ὕδροφοβία* was first employed by Celsus somewhere about A.D. 176 for the delineation of a *symp-tom*: hence its employment as specific of a *disease* is of questionable utility, and has been extremely provocative of error in the past.

† *Bulletin de l'Académie des Sciences* for January 18, 25, and May 31, 1881.

‡ Democritus (see preceding paragraph) is the earliest author of which we have any record who advances this claim.

§ *Académie des Sciences*, December 12, 1882.

spontanée”* (dumb, furious, and spontaneous rabies), in utter unconsciousness of the fact that the first two explain degrees of virulence without being specifically distinct, and that the latter is in no sense possible. *Rabies is positively never spontaneous*, but a result of direct infection,—that is to say, every rabid creature has been inoculated by another so infected, that in turn was bitten by a third, who, in like manner, derived the disease from a fourth, and so on!†

Soon‡ Pasteur formulates a new announcement: That rabic virus multiplies in the spinal cord, and that while one portion or section may contain it in abundance, another contiguous, perhaps intervening, may be wholly inert; a proposition so absurd on its very face as to require no comment. Then, that “while virus cannot be attenuated by culture, it may be weakened by employing different species and forms of life,—i.e., it attains a descending degree of virulence by the inoculating of one species from another,” and “virus thus attenuated, *if applied to the same species, remains so attenuated*, direct inoculation rendering the animal proof against subsequent infection.” This is the doctrine of “fixity of virus” of which so much has been said and written; yet in the same communication he makes the perplexing assertion, “By performing inoculations in series and making transfers from one animal to another, the virus is *not* attenuated; but, on the contrary, *attains a very powerful degree of activity*.” And again, a little farther on, by a series of inoculations upon rabbits he is enabled to “*increase the strength of the virus to any desired degree*,” and by inoculations of monkeys (which, strange to say, *for a biologist*, he employs in lieu of human beings under the mistaken supposition that like physical conformation begets like physiological conditions) he secures virus “limited in virulence, *further attenuated* by transfer to rabbits.” Three months later§ comes the assertion that he could now render dogs “*refractaire*” to rabies “in as large numbers as any one could wish,” and yet, to this hour, it has been impossible to find one canine so rendered refractory or insusceptible, or any record of such, outside of the laboratory of the École Normale; and he now admits that *twenty-five per cent.* of his experiments have been failures. In all candor I ask, What

value can attach to such statements as these, published in *La Nature*, and uttered before the Académie des Sciences? Is this the testimony of an expert scientist, or is it of any more value because Pasteur utters it?

Next we have the claim of the molecular origin of virus, whereby Pasteur asserts his ability to determine a rabic from a non-rabic brain “with certainty,” merely by the presence of “certain infinitesimal granules;” and when it was pointed out that his infinitesimal molecular granules were the *microzymes* of M. Bechamp, and common to all brains both in health and disease, he still adheres to the statement while admitting the fact, asserting there is a difference which *he* is able to detect but cannot explain. And later, in the face of the evidence and his own admissions, he pointedly asserts the molecular granules to be veritable *contagii vivi*.

In the final announcements,|| those which embraced the much-heralded “*Method*,” Pasteur unequivocally asserts his ability to prevent rabies at any time prior to its first acute symptom, “*even though years may have elapsed since the bite*,” and about this time he says, through *Figaro*: “*Any one bitten by a mad dog has only to present himself at the laboratory École Normale, and by inoculation I will make him wholly insusceptible to rabies even if subsequently bitten by a number of rabid dogs*,” and later, in the same publication: “*Whoever is bitten by a rabid dog has only to submit to my three little inoculations, and behold! he need not have the slightest fear of hydrophobia!*” After all this, however, upon the death of his first patient that presumably *was* bitten by a rabid animal, he shortens the unlimited period to *thirty-five days*, thereby placing the patient beyond the pale by *one day*; and a little later, without any explanation, to *fifteen days*. This patient only a few days before death was pronounced virtually cured, but with the unfortunate termination he suddenly veered about, and claimed it was received only through charitable consideration, knowing full well the result that must ensue!

The method is explained as the hypodermic injection of rabic spinal cord desiccated in veal-broth, the value of the inoculation being in *inverse ratio to the quantity, but not of its quality*; and that “*the strength of the cord must be such that it does not endanger the life of the subject*,” . . . yet is “*more virulent than the virus of street dogs*.” This may be considered a perspicuous style of composition at

* Yet Pasteur claims to have disproved and set at rest the theory of *spontaneous generation*!

† Ibid.

‡ February, 1884.

§ May, 1884.

|| October and December, 1885.

the École Normale, but for my part I must confess to finding it uncommonly cloudy, and about as definite as the subsequent information that he is unable to explain how the strength of the cord used is determined, further than he "*knows by experience and looking at it.*"

The case of Joseph Meister, which is perpetually cited as evidence of the "*Method,*" demands some consideration. If the whole history is considered and weighed, the evidence is wholly of a doubtful or negative character. The boy, a child of nine years, was bitten July 4, 1885, in thirteen (some say fourteen) places, and *the wounds immediately cauterized.* The offending canine was also promptly killed, and the autopsy discovered hay, straw, and other extraneous articles in the stomach, whereupon the creature was pronounced rabid. Two assistants of M. Pasteur, to wit, Messrs. Vulpian and Grancher, decided also that the little lad was "undoubtedly doomed to rabies," because of "the number and severity of the bites!" The question is, whether this case has not done Pasteur material harm. It certainly has wrought him the enmity of eminent scientists and pathologists, who accuse him of "making capital" with dishonest motives, since every physician and veterinarian knows, or should know, that the stomachs of the *canidae* are almost never without foreign bodies,* frequently exhibiting a general and miscellaneous assortment, induced as supposed by the presence of intestinal parasites (from which no dog is ever wholly free), or irritating materials (bones, earth, etc.) incidentally swallowed with food. The contents of the canine stomach are in no way pathognomonic of any malady; and foreign substances therein especially obtain during digestive and intestinal disturbances, or other derangements of the *primæ viæ*.

It will be observed, also, that the prompt cauterization of young Meister's wounds is altogether ignored; yet Youatt assures us that by caustics alone he preserved more than four hundred people from the horrors of rabies, and *himself* on *seven* several occasions. Again, from Pasteur's stand-point

there is apparently no limit to the period of rabic incubation, and therefore abundant opportunity remains for the disease to yet manifest itself.†

In reviewing the mechanical evidences of Pasteur's work, I avail myself of the labors of one who has given the subject of Pasteurization no slight attention. Says Dr. Charles W. Dulles,‡ in an essay read before the Philadelphia County Medical Society:

"As usual Pasteur speaks in his last communication as being '*always successful*;'§ again, his experiments have been '*innumerable, so to speak,*' . . . drawing conclusions that could only rest upon an uninterrupted series of experiments, each complete and successful throughout. Having taken the trouble to figure out what *one* such series represents, I find it means: No interruption, and no failure in experiments demanding *from one hundred and thirty to one hundred and forty rabbits, and a period of from two and a half to three years!* An interruption anywhere would condemn the whole series. Supposing, then, no interruption occurred, *how many such series could Pasteur have carried on since the time he says he began them?*

† Under the head of Paris correspondence, and date of January 15, 1886, is found in the *British Medical Journal* an account of a case by Dujardin-Beaumetz. The patient had been bitten in the hand more than a year before (in 1884) by a dog that, though it gave no evidence of rabies, was immediately killed. Some slight pain occurring in the vicinity of the wound, and excited by the expressed fear of friends, the man applied to Pasteur, who as usual made a theatrical declamation: "*I can preserve, but I do not cure!*" said the *savant* of the École Normale; and the poor fellow subsequently expired in horrible agony! If a rabies can be contracted two years after the wound is inflicted, what value have the assumed cures of Pasteur as evidence!

The theory whereby rabic virus is supposed to remain latent in the vicinity of the wound for considerable periods, varying from a few days to as many months or years, is a superstition of more than *twenty centuries'* standing, and it is surprising that enlightened and intelligent individuals, especially members of the medical profession, should yet be found giving credence and adherence thereto. Such presupposes a stasis of capillary circulation without any of the consequences that accrue to such results, and therefore involves physiological and pathological impossibilities. The truth is, there is no possible or known septic or toxic poison, whose effect is the result of direct contact with the circulatory system, that requires even half a dozen weeks for development; in that time, if it has not manifested itself, it has been eliminated, and subsequent effect is due to other and coincidental causes.

‡ *N. Y. Medical Record*, February 13, 1886.

§ Pasteur ever ignores the law or possibility of coincidence, as well as all form of control experiment (negative evidence): this is conspicuous everywhere throughout all his utterances regarding rabies.

* Dr. Spitzka, of New York, justly celebrated as a pathologist and neurologist, declares that of more than forty canine vivisections in the laboratory of Prof. Henry Draper, in not a single subject was the stomach found without foreign bodies, such as *spools, strings, coals, ashes, hay, straw, tops, leather, rags, buttons*, etc. That this is the invariable rule, I can further corroborate from personal experience in numerous canine autopsies and dissections.

"Again, what seems a most fatal objection to the trustworthiness of these experiments is Pasteur's own admission that a full half of the spinal cords used in the crucial test upon Joseph Meister proved to have no virus at all when tested on rabbits! If this could happen in the *only* detailed experiment that he has ever recorded, what are we to believe of the experiments carried on in the secrecy of his own laboratory, of which no record has ever been given, and of which not a single witness has ever spoken?

"Another matter to be remarked is, that until recently Pasteur has given no hint that the virus of rabies could be attenuated so simply as by desiccation of the spinal cord; and yet, if his own statements are to be accepted, he must have been far advanced in his experience with this method at the time he was startling the world with his backward and forward modifications of the virus by means of monkeys and rabbits, and presenting that as the *only* way of procuring material for inoculations.

"If we take the trouble to place side by side Pasteur's statements at different times, it is found that they are so inconsistent that the cordial acceptance of any one of them demands that those preceding be wholly banished from memory. At first it was in the brain that the virus was to be obtained; then trephining and intradural inoculation was the sovereign method; then intravenous inoculation simplified the matter; then blood was a good virus (though this had been previously denied by him in his second communication to the *Académie*); then smaller quantities procured the fiercer rabies; then inoculations in series modified the virus after many variations; then a few monkeys and rabbits did the work; and, to crown all, ignoring the evidences of his own work in regard to *charbon* and *chicken-cholera*, he declares that the protective character of the virus depends upon a reduction of *quantity*, but *not in the virulence of the material used*! And when we catch our breath, we cannot but recall what has gone before and ask, *If the hypodermic use of graduated virus was the means Pasteur found most readily produced the most furious form of rabies in February, 1884, when he must have been half-way through the series of experiments upon which his final communication is made, how could the remaining half have sufficed to prove the same procedure would exert a kind and protecting influence on the same animal and in man!*

"Also, Pasteur actually intimates that the

virus of rabies may be formed of two distinct substances,* and that by the side of the one which is animate and capable of germinating in the nervous system there may be another inanimate, having the power, when in proper proportions, to arrest the development in the former!"

The latest announcement of the French *savant* is that his inoculations "have proved *successful*" in some sixteen hundred and fifty cases,—cases which include Joseph Meister, the four Newark children,—Kaufmann, Salter, Bucklin, Miss Morosini,—Metzler, and all who *were not* bitten by rabid dogs,† to say nothing of some scores of healthy people who underwent the operation from curiosity or to secure the immunity it is supposed to insure. From the remaining number must be deducted *ninety-five per cent.*‡ for those bitten by rabid creatures who would in any event escape all manifestations of the disease. From the balance further subtract those in whom the disease has not yet had time to develop (accepting Pasteur's estimate thereof).

With such essential depletions, even ignoring the last, the figures assume such insignificant proportions as to be practically without value. To be sure, Pasteur has recently claimed, or others have claimed for him, that

* This is subsequently affirmed most positively by Dr. A. Cartaz in *La Nature* on the strength of Pasteur's own assertions; also by M. Vignal, another mouth-piece of the *École Normale*.

† Few of the cases whose positive history can be traced afford so favorable evidence as even that of Joseph Meister. The dogs that wounded the Newark children are still alive and well, having been quarantined for observation, and two of the children who did not visit Pasteur fared equally as well as those that did. Kauffmann and Bucklin were not even bitten, but had some portion of their bodies caressed by the tongue of canines that gave no evidences of *any* disease; and the evidence in Miss Morosini's case rests solely upon one little feather found within the stomach of her pet.

‡ The proportion of dogs—much less human beings—that are infected by the bite of rabid creatures is extremely small. Nine different attempts to procure the disease in the famous poodle of Hertwig failed. Dogs experimentally bitten from three to sixteen times each, at veterinary schools in Germany and throughout Europe, suffered not the slightest inconvenience therefrom; and individual cases with greater ratios are common. Grove admits that but one dog out of every *twenty* bitten by other and *known* rabid dogs ever contracts "canine madness." John Hunter says, one of *twenty-one*; Hamilton, one in *twenty-five*; Nieumann, one of *thirty-five*; and Fabré's extended researches revealed but a total of thirty-one out of eight hundred and ninety-two cases,—*less than four per cent.* Statistics embodying larger figures on close scrutiny are found to make no distinction between specific or true rabies and a simple neurosis inducing a spurious rabies.

no inoculation is ever undertaken until a certificate is presented that the person has been bitten by a rabid dog ; but this, of personal knowledge, I know to be untrue.* Again, since there are positively no evidences either in the life or death of a canine whereby a rabies may be with certainty determined, even by the most profound veterinarian and physiologist, of what value is such certificate?

Twenty-one deaths have followed Pasteur's ministrations, in spite of the boasted success of the "method," all of which, with the exception of the Pellitier child, came within the fifteen-day limit, and for a majority of which the lame explanations were offered that different species of *canidae* induced different degrees of virulence, or that they were "bitten near the brain." This latter supposition, that the point of inoculation has direct reference to the period of incubation, is another theory borrowed from Davaine, and long since repudiated by the latter ; moreover, it has been repeatedly disproved, even so recently as April, 1884, by Dujardin-Beaumetz in a communication to the very Academy of which Pasteur is a member, embodying a synopsis of thirty-four cases occurring within the Department of the Seine !

Within the last hundred days no less than six cases are reported as having succumbed to rabies, all of which had been under Pasteur's hands and pronounced by him "cured." On the 27th of April a young girl from the Jura was bitten, and reached the laboratory of the École Normale nine days later. At the end of fifteen days she was discharged with the assurance all danger had been averted ; yet on the forty-third day following the first inoculation she died of rabies. Also, the *Journal de Médecine de Paris* in July reported that a Russian woman had just died of rabies at her own home in St. Petersburg, whither she had returned after undergoing Pasteur's inoculations, and assured by him she was "completely cured." On the 21st of July a man bitten by a rabid cat died at Grenoble who had undergone the preventive treatment of the "Method" from May 4 to May 13. Of seven persons bitten by a mad dog (not wolf this time) sent from Russia, and all treated by Pasteur, three succumbed to this fatal malady shortly after their return home. And yet Pasteur continues to announce the certainty (*surement*) of

his "Method," and, what is more, secures converts !

True rabies presents multiple and varied phenomena, without a single constant feature, and hence its presence is with difficulty determined even by the most expert. Indeed, so erratic are its progressions and manifestations, that it is a greatly-mooted question whether it exists as a malady *sui generis*.† More than sixty diseases in man, and double the number in the dog, are constantly being mistaken for rabies by the most expert members of the medical (general and veterinary) professions. The former include disorders of the stomach, especially in very young children, as well as inflammation of the stomach and œsophagus in adults ; disorders of the respiratory apparatus ;‡ disorders of the circulatory apparatus ;§ systemic conditions, including rheumatic fever, gout,|| *uræmia*, pernicious an-

† Wounds, even though made by one of the carnivora (*canidae*), are in no sense presumptive of rabies ; even the vast majority of rabic cases are, undoubtedly, the sequel of functional disturbances of nerve-centres as the result (a) of simple *septicæmias*, and (b) the fears and imaginations of the individuals, their friends and advisers. When we consider the influences of fear, anxiety, joy, and anger upon the great nerve-centres, remembering that these are capable of so modifying any and all the secretions of the economy, even to the milk within the maternal breast, or the saliva, until toxic properties are developed ; that persons have died within a few moments, or hours, from these and kindred causes ; that individuals in robust health thereby are permanently invalidated, rendered insane, thrown into convulsions and catalepsies, and driven to *felo-de-se* : we understand how cases of so-called *hydrophobia* may, and do, arise, especially if by any stretch of the imagination the animal can be linked therewith. No physician or neurologist, however able, expert, or talented, has ever been permitted to fathom the mysterious workings of the nervous centres under profound agitation of the mind, or to discover what influence the perturbed mind may have reflexly upon the nervous system, or through it upon morbid agencies that may already have been implanted within the economy. And this is even more true of the canine than the human subject. Wounds made by *carnivora* (flesh-eaters) are always prone to develop *septicæmia* in any form of life, by reason of putrid and decaying particles that may be retained in and about the teeth and mouth.

‡ See Transactions of the Medical Society of the State of Pennsylvania for 1884. The resemblance in many of their symptoms of diseases of the respiratory tract to rabies is so marked that Aromatarius, in 1625, devoted a monograph to proving rabies was but a *contagious sore throat*.

§ That inflammatory conditions of the heart and its envelopes (*pericarditis*, *endocarditis*, etc.) do frequently give rise to conditions that are mistaken for genuine manifestations of rabies, is a fact well recognized in most treatises and monographs upon the subject.

|| H. Sutton.

* M. Wm. Vignal writes (in *N. Y. Medical Abstract* for May, 1886) : "Although Pasteur asks for a certificate, yet when one is not forthcoming and there is reason to believe the dog is mad, he inoculates!"

æmia, intermittent fever, typhus, mercurialization,* pregnancy,† bronchocele, poisoning by iodo-hydrargyrate of potassium,* deuto-iodide of mercury,* digitalis, and various toxic plants; disorders of the nervous system,—meningitis, pachymeningitis, tumors, abscesses, and parasites of the brain, simple neuritis, acute mania, spinal sclerosis, acute delirium,‡ alcoholism, tetanus, epilepsy, hysteria, and the use and abuse of chloral, chloroform, ethyl bromide, hyoscyamus, cocaine, betel, etc. In the animal, also, we find the following: "tooth-ache," "earache," canker (mastoid disease), abscesses, *enteritis*, *gastritis*, *gastro-enteritis*, *ileus*, *peritonitis*, *nephritis*, *cellulitis*, *cystitis*, intestinal obstruction and perforation, rheumatisms, heart, throat, and lung difficulties, epizootics and distempers, parasites in throat, nasal cavity (*pentastomæ* and *æstii*), kidneys, heart, intestines, liver, brain, muscles, etc.; skin-diseases (*mange*); diseases of the eye; "sea-sickness"; "land-sickness" (following long voyages); ague, fevers, *chorea*, epilepsy, epileptiform spasms, spasms of reflex origin; pure psychoses (*mania* and *melancholia*); *anæmia*, *uræmia*, *pyæmia*, *septicæmia*; metallic and corrosive poisons (copper, arsenic, benzoic acids, mercury, etc.); *hydrocephalus*, *meningitis*, *encephalitis*; and in fact the whole class of nervous and mental diseases to which canines are subject in *even greater degree than man*, and whose existence has not even been suspected by a majority of observers. Personally, after more than twenty years' experience as physician, dog-owner, dog-breeder, and student of canine and comparative medicine and physiology, I have yet to meet with an *absolute* case of rabies in the dog; and of some scores of so-called hydrophobic animals, alive and dead, presented for my inspection, one and all were found to have suffered from other and innocuous maladies.§

* Dr. Reid, in 1817, mentions a young woman who died as a sequel to profound mercurialization induced with a view to relieving a tertiary syphilis. I am personally familiar with a like case induced by the combination of mercury biniodide and iodide of potassium. The immediate cause of death in both cases was really ulcerative stomatitis.

† Doleris and Mazars de Cazelles mention "*hydrophobia*" as occurring as a sequel to pregnancy; the latter says *eleven times* in the same individual.

‡ Westphal, in *Archives für Psychiatrie*, II., says that acute delirium is often confounded with rabies, and that in "*depressed and hypochondriacal subjects the bite of a healthy dog will cause hydrophobia.*"

§ Three skulls recently came into my possession, by favor of a skilled member of the veterinary profession, of dogs slain as infected with "hydrophobia," and yet

Unfortunately, the testimony of Pasteur as to what constitutes rabies, owing to his total lack of medical education and training,|| is valueless. It is something more than strange that the dictum of such a visionary should be received so implicitly, while the evidence of a Huxley, Owen, Haeckel, or other eminent biologist possessed of sound physiological education upon this particular subject, would pass almost unheeded save as corroborated from other sources; and that, too, in the face of the fact that he (Pasteur) exhibits a total lack of familiarity with the history of the disease, past and present, and formulates as specific manifestations trains of symptoms that are common to scores of simple maladies, and in no sense pathognomonic of any one.¶ Every physiologist or pathologist knows that intradural inoculation,—the means employed by Pasteur to secure "infected" (?) spinal cords,

all suffered no other malady than the so-called "canker," *otitis cellulosa*, or mastoid disease.

|| In the face of the evidence so frequently offered, there are those who persist in believing M. Pasteur an epitome of biological, medical, physiological, pathological, and chemical attainments. To such I will not offer evidence personally derived, but recommend the perusal of the volume entitled "Pasteur: his Life and Labors," as edited by his *son-in-law* and revised by *himself*! For the benefit of such as may not encounter this most extraordinary work, I quote a few paragraphs from an article by Dr. Frank S. Billings, an intimate and ardent supporter and admirer of the man, as found in the April (1886) number of the *Journal of Comparative Medicine and Surgery*: "Pasteur is no chemist, . . . he is not even a physiological chemist, nor has he any professional knowledge of the fundamental branches of medicine: and last, but most of all, we fail entirely in perceiving any evidence of broad education in biology, zoology, and philosophy, which is absolutely necessary to a man having comprehensive views in science. . . . Pasteur did not approach any of them (anthrax, chicken-cholera, the swine-plague, and rabies) as a pathologist; . . . he had no interest in these diseases, *as such*. He did not care an iota about their nature other than their contagiousness; and so far as the nature of the pathological changes occurring in them, they had no interest for him at all. To Pasteur they were simply a given something; in the tissues of these animals there is lodged a specific quantity, this quantity the contagious or infecting principle. The next thing was, what can be done with this principle? Pasteur is no bacteriologist; not one of his statements as to the existence of a specific form in a given disease are to be trusted unless we can find collateral support for them in the works of others. . . . In fact, unlike such men as Darwin or Virchow, Pasteur is not a man of ideas, not a deep thinker; he will never move the world as a great teacher, but simply as a contributor of new evidence; . . . he ignores the work of others, and to my mind the reason for this is that it is largely medical, and hence, knowing nothing of it, it would be of little use to him."

¶ See page 680.

—even of the simplest septic or aseptic product, is almost invariably attended with consequences most grave to the creature so operated upon. Naturally, paralysis most frequently follows, yet it is the evidences of paralysis upon which Pasteur so confidently relies for his diagnosis of rabies. If an opening be made in the cranium of the dog, or the rabbit,* directly over the nerve-centres,—and the nervous system of either is much more impressible than that of man,—and a drop of pus, blood, or *bouillon* introduced in the submeningeal space, the miracle would be if the creature *did not* speedily develop a paralysis of facial muscles and posterior extremities!† M. Paul Bouillier, a distinguished veterinarian and a member of the Parisian Council, declares—and there is no individual in better position to *know*—that Pasteur's inoculations have not the slightest preventive or mitigating influence upon rabies, either in the canine or human subject; that the animals that provide the so-called virus are not rabid, but sufferers from simple cerebral and meningeal affections artificially induced; that the persons supposed to have been cured by the "*Method*" were never affected by true rabic virus,—either the creatures that produced the wounds were innoxious, or the virus individually was inoperative; and finally, after having given the matter his personal attention, arriving at the foregoing conclusions, he challenged M. Pasteur to personal test,—each to be bitten by a *known* rabic animal. M. Bouillier to be cauterized, and M. Pasteur to rely upon his inoculations.

Complete paralysis as the sequel of submeningeal inoculation constitutes the "*dumb rabies*" (*rage muet*) of M. Pasteur, while a less diffuse form of intradural inflammation, provoking delirium, either with or without subsequent palsy, becomes a "*rage furieuse*" (*furious rabies*). This accounts also in some measure for the assertion that the latter is induced by employing minute quantities of

virus, the larger proportion procuring *rage muet*, which he mistakenly supposes to be the least specific and virulent form of disease: an error that would scarce be perpetrated by a pathologist. I now recall four comparatively recent cases whereby death was induced in the human adult from intracranial (cerebral) abscess, and in not one of which a drachm of pus was found on autopsical examination. One yielded only about one-third the quantity; and yet paralysis was present, along with other symptoms that, measured by the Pasteurian standard, would have made a diagnosis other than rabies a criminal error!

Fairly familiar with the man, and his methods and abilities, I have no desire to question Pasteur's primary integrity or original purity of purpose. On the contrary, I would accord him every honor that is his due. I regret that his efforts regarding rabies have not some definite basis, and that they are not more deserving of support. Unfortunately, he has been led into error,—the error of ignorance of his subject,—while the constant empirical promulgation of his peculiar ideas retards the wheels of progress, whereby science is made to suffer. I must admit it is difficult to criticise the man fairly or justly, since his work for the most part consists of mere assertion. Again, no one can follow his work. Apparently he cannot follow it himself. Take any one of his utterances, and one is amazed to find a contradictory mass of statements, such as have never emanated from any other source. We discover no well-arranged, systematic records of study and experiment, along with data, facts, and conclusions carefully considered and worked out,—the usual evidences of the efforts of the true scientist; but we find positive assertions to-day as positively controverted to-morrow, both overwhelmed and denied on the third occasion. Judged by any standard, it is impossible to accord him rank as a scientist, and yet carefully considering his real and brilliant discoveries, he deserves high place in general estimation. Both visionary and erratic, without any consideration of cause and effect save as desired, demanded, and expected, he hails with delight all evidences that may present themselves as positives, while wholly ignoring the negatives: for the time being he is the man of a single idea, and all things, therefore, must accommodate themselves and become subservient to that idea. Those who persistently follow one train of thought with the one end in view to the exclusion of everything else, are sure

* It is a well-known fact that the *leporide* (rabbits and hares), though suffering from rabies, exhibit no evidences of specificity. How, then, does Pasteur definitely decide whether he succeeds in producing the disease in this order of animals is an interesting subject of query.

† See account of six experiments made by Dr. E. C. Spitzka, wherein the brains of as many dogs were inoculated with normal spinal cord of a calf, with emulsion of pons and cerebellum from a patient who had succumbed to specific rabies, with yellow soap, and stale or putrid urine of horses, as communicated to (and animals exhibited before) the Society of Medical Jurisprudence and State Medicine.—*Journal of Comparative Medicine and Surgery*, July, 1886.

to discover evidences that to their own mental vision are incontrovertible. An hour's conversation with Pasteur is convincing evidence that he must be included in this category. Add, too, a hasty temper, overweening confidence and egotism, impatience of slow experiment and inability to await definite results, dread of being forestalled and supplanted in public favor, and then, and then only, can a true estimate of the man be had. Even Napoleon had not a more exalted idea of "*destiny*." Such characteristics cannot but tend to the formulation of crude and ill-drawn conclusions as facts, trusting to the varied chapters of accidents to sustain them in the future as they have done in the past. Nevertheless, even such genius as may be granted Pasteur does not foster confidence in his assertions or abilities. What we know of ferments, of anthrax,* chicken-cholera, vine and silk-worm disease, is in great measure due, directly or indirectly, to his labors; but since his unqualified and positive promulgation of the rabic theory, and the flat failure of the swine-cholera† prophylaxis, his assertions will scarce meet the cordial approbation of candid scientists until corroborated from other and more able sources. Indeed, his assertions have never been received at home with the cordiality and reverence with which they are popularly accredited in the United States,—error derived from idle, irresponsible communications to the medical and general press; and, save as the name of M. Roux, or M. Wasserzug, is associated therewith, little heed is given thereto. One of his greatest inconsistencies, the one which has done more to promote suspicion and distrust in thinking and observant minds, is his oft-repeated assertion that the "*Method*" is "*sure, simple, safe, and practicable*." Yet at the same time he positively avers that, outside of his laboratory, "there is not a single individual capable of undertaking the treatment with *surement*." Another is, "Inoculating a quantity of virus insufficient to produce the symptoms of canine madness (*phenomènes rabiques*) does not confer immunity,—that is, the remedy must needs be more virulent, and consequently more dangerous than the virus that

obtains the disease,—"*more virulent than (the bite of) street dogs!*"

It must be remembered that Pasteur has wholly abandoned the saliva as a natural virus,—the only factor known to positively communicate the malady,—substituting instead emulsions or macerations of spinal cord.‡ That the latter are capable of inducing simple septic inflammation does not admit of a doubt; and it is this sepsis that, without either evidence or experience, he so unhesitatingly and arbitrarily pronounces "*rabies*." If his experiments prove anything, it is only that these inoculations, under certain conditions, may render different forms of animal life "*refractaire*" to the condition the virus itself induces; and here is embodied one of the very principles at which we have been accustomed to sneer when advanced by our brethren of the strict and ultra-homœopathic persuasion.

In lieu of other evidence, to witness the inoculations as publicly performed at the laboratory École Normale alone would be sufficient to excite grave doubts of their utility, providing one can resist the personal magnetism of Pasteur sufficiently long for correct observation. Daily some half hundred or more people crowd the operating-room, and without any rule of procedure or preference walk about a table upon which is placed the array of glasses that we are told contain virus in *bouillon* in varying degrees of culture and virulence. No reference to case-book or register is ever made, even if such be kept; but M. Grancher inoculates (for Pasteur, who is disqualified by lack of medical education under French law) in a grossly unscientific, not to say slipshod, manner. It is impossible he should know who is who, since he rarely lifts his eyes to identify the subject, and he receives the syringe already *filled*, often before

* Already comes the news from France that the preventive method for charbon is unsatisfactory. How far this is truth or due merely to rumor I have no means of knowing at present.

† See Department of Agriculture Reports of the past four years; also Report of the State Veterinarian of Nebraska, and his utterances in the *American Veterinary Review* for the current year.

‡ Galtier, of Lyons, a much more able, thorough, and candid experimenter than Pasteur, would seem to have set this matter at rest by collecting and verifying the experiences of others in connection with his own work. By a number of series of experiments, secured further by careful control evidence, he has demonstrated the fact that the *materies morbi* of rabies is confined to the saliva of the true carnivora alone, that inoculation with blood, portions of salivary and parotid glands, portions of the contents of stomach, of brain and spinal cord, or their fluids, all lead to no infection. He further cultivated virus obtained from the *canida* in normal saliva, and vaccinated guinea-pigs and rabbits that died in from four to twelve days; but in retro-vaccination of dogs by means of the salivary products of these creatures, he was unable to secure a rabies in a single instance. N.B.—*No non-carnivorous creature can communicate a rabies!*

it is known who the patient will be, from the hand of a servitor, and empties it into the right or left abdominal space, as the case may be, without question or inquiry!

The results of the "*Method*" are easily summed up: Twenty-one deaths, with no pertinent or satisfactory explanation; some hundreds of people to bear witness that it is productive of no immediate harm; as many more to illustrate the well-understood advantage of fears allayed; in all no more than has accrued to *aristolochia indica*, *simaba cedron*, *inula*, *xanthium spinosum*, *planta genista*, applications of human fæces, Sanjoie pill, "the false tongue of the colt," "mad-stones," and other nostrums innumerable. *Per contra*: It has induced and fostered a widely-spread irrational epidemic of *lyssaphobia*, or *rabiphobia* if you prefer; catered to an irresponsible and sensational press; promoted the sale of nostrums and encouraged vile quackery; is responsible for numberless suicides, deaths from spurious rabies, and at least one *murder most foul*;* and brought about a heartless and cruel persecution of innumerable and inoffensive canines!

The science of the present era is nothing if not progressive, but it demands *truths*, not mere vague theories and unsupported inferences. Superstition is the refuge only of the timid and inconsequent; and to the superstitions of twenty-two centuries and more Pasteurism owes its rise; superstitions from which the medical profession, alas! is none too free, and that inculcates insane fears that lead to grasping at straws. There are no parallels between its teachings and those of Jenner, to which it has so often been compared, since the latter was derived from fixed pathological data, entirely lacking to the former, which rests solely upon the unsupported and self-contradictory assertions of its author. Neither is the opposition to Pasteur the outcome of bigotry, intolerance, conservatism, or jealousy, as many are led and willing to believe, but merely a demand for hard, stern facts, stripped from all jugglery and superstition,—a demand of science that an intangible theory be made tangible, and reconciled to existing and firmly established physiological and pathological laws which it controverts. *Verborum sat!*

* (Associated Press despatches.) "Cohoes, N. Y., February 3, 1886.—Sunday night George Waterhouse . . . showed signs of hydrophobia. He grew rapidly worse. . . . The physicians saw there was no hope of saving him, and to end his sufferings ordered that he be *smothered*, which was done. Waterhouse was bitten by a dog *six years ago*, while a resident of Lansingburg!"

SEPULTURE VERSUS CREMATION.

BY GEORGE HAY, M.D., PITTSBURG, PA.

EPISTLE to the Hebrews, chapter ix. verse 27: "It is appointed unto men once to die, but after this"—decomposition. This statement is true not only as regards men, but as respects all other beasts. The word "beasts" is used here advisedly, for, from the naturalist's point of view, man is a beast and nothing else. Admitted at once that he is the highest of the beasts in organization, and by consequence in physical and mental capacity, still that does not alter the essential fact that he is a beast. In common, then, with all other beasts, certain elements enter into his composition. For the soft tissues those elements are carbon, hydrogen, oxygen, nitrogen, sulphur, and phosphorus; for the hard tissues the elements are in a limited sense calcium, phosphorus, carbon and oxygen, forming phosphate and carbonate of lime in the bones and teeth. Those just enumerated constitute by far the greater bulk of the animal, although very small proportions exist of many other elements. For a longer or shorter time the individual man lives,—that is to say, the vital functions of waste and repair are carried on; but sooner or later, as the results of such accidents as violence or disease, or as a consequence of that impairment of vital functions popularly termed old age, he dies. At the moment of death all vital functions have ceased, and another kind of energy at once takes possession of the dead body,—the energy, viz., of decomposition. Bearing in mind the elements mentioned above, what are the results when a body is left freely to decompose in the open air? They are carbonic acid, water, ammonia, phosphoretted hydrogen and sulphuretted hydrogen. The carbonic acid and ammonia are the aerial food of plants. The rapidity of such decomposition would be determined by the temperature and moisture of the surrounding air. Bacteria and vibriones would find their way to the corpse, and the result would be putrefaction, evolving the gases already mentioned, accompanied by what is popularly termed a stench, and producing carrion. Leaving out of the account carrion-eating beasts, birds, and insects, and also carrion-eating larvæ of insects which are not themselves carrion-eaters, the gases already mentioned would be the results of the decomposition of the soft tissues and also of the organic portion of the hard tissues. After a time all that would be

left would be the inorganic portion of the hard tissues, consisting mainly, as already stated, of phosphate and carbonate of lime, in a pulverulent condition. This powder would be blown about by the winds, and scattered over the soil, where it would ultimately be dissolved by water containing carbonic and sulphuric acids, and thus be rendered capable of absorption by the roots of plants as part of their inorganic food. The phosphoretted hydrogen and sulphuretted hydrogen from the decomposition of the organic tissues would ultimately be converted into phosphoric acid, sulphuric acid, and water by oxidation. Thus the whole body would ultimately find its way back to the earth whence it was derived, to reappear in the shape of grasses (including cereals) and other plants, food for man and other beasts. Why, then, when nature so effectually disposes of the dead body, do human beings bury their dead? For two principal reasons, although perhaps few persons would ever stop to make the inquiry. In the first place, the stench is exceedingly unpleasant; and, secondly, the carrion-eating insects are particularly dangerous to the living. This last fact the writer has great occasion to remember, for only last summer he was bitten by one of those insects, and ran a great risk of losing his life in consequence. So, people bury their dead. How? A pit from six to eight feet deep is dug in the earth, and the body, either enclosed in a coffin or wrapped in a sheet, is laid at the bottom of the pit, and covered with the earth which had been taken from the hole. Frequently a stone slab is erected by "affectionate" friends, upon which are recorded the superhuman virtues of him or her who lies beneath. This hole is called a grave, a word derived from the Anglo-Saxon *græf*, having the same signification. The body is said to be buried or *interred* (from the Latin *in terra*),—i.e., put in the earth. At the depth of six or eight feet precisely the same ultimate changes take place as when the body is left spontaneously to decompose with free exposure, as above described. It is doubtful, however, whether real putrefaction takes place at this depth; and the writer is somewhat inclined to think that the change is somewhat analogous to *eremacausis* or decay, for it is very questionable whether bacteria and vibriones can be alive and active at the depth of eight feet. One thing, however, is certain, and that is, that in the grave the process of decomposition proceeds much more slowly than it does

at the earth's surface. Still, the ultimate results are the same. The carbonic acid, water, and ammonia, instead of being entirely dissipated in the atmosphere, would mostly be carried by water into springs and streams, as also the phosphates and carbonates from the bones and teeth. These substances would form the food of lacustrine, fluviatile, and marine plants, which would in their turn afford food to mollusca and fishes, and thus again become the food of man and other beasts. Thus nature has again effectually disposed of the dead body, but by burial the stench and the insects have been entirely avoided. Suppose now that the person has died from scarlet fever, or smallpox, or some other infectious disease, and that he has been buried within the limits of a city. Cities have drains and sewers, the surface openings to which are frequently very ineffectually trapped; fluids draining from the dead bodies may easily find their way into the sewers, a sudden gust of gas occasioned by some disturbance in the sewer contents may carry the infection of those diseases into the city atmosphere, and thus reproduce the diseases in the living. On the other hand, diseases may be swallowed,—e.g., typhoid fever and cholera Asiatica. The fluids draining from bodies may easily carry those diseases into surface wells, whose water being imbibed may produce the disease in the living, or the decomposing fluids getting into the surface wells may form a *nidus* for other diseases. Such and other considerations lead to the conclusion that intra-mural cemeteries are exceedingly dangerous. All cemeteries ought to be situated a mile or two outside of city limits, away from drains, wells, or other direct means of contagion or infection. If such precautions were adopted and rigorously enforced, having due regard to the conditions and surroundings of the cemeteries, sepulture would be rendered perfectly safe from a sanitary point of view. Reference has already been made to the retardation of decomposition by burial. If before burial the body has been subjected to the modern process of "embalming," decomposition will be still more slow. The writer has already examined in his own laboratory several embalming fluids used by undertakers, and has found them all to consist chiefly of solutions of arsenite or arseniate of sodium. It is easy to see that such "embalming" might be used to mask crime, and, in point of fact, "embalming," as at present carried on, puts a premium upon murder by arsenical poisoning. This fact the writer

brought first to the notice of the medical profession in a paper "On Modern Embalming," published in the *Philadelphia Medical Times* of August 19, 1876, to which the reader is referred.

Cremation comes now to be considered. The word cremation is derived from the Latin *cremo*, I burn, and means the act of burning, with the special signification of burning dead bodies. In the year 1876 the world was thrown into a ferment by the news that the body of a German baron by the name of De Palm was to be burnt to ashes at Little Washington, a few miles from Pittsburgh. A doctor of the name of Le Moyne (his own name may have suggested the practice, the French words *le moine* signifying the warming-pan) had constructed a crematory. The crematory consisted essentially of a fire-clay gas retort nine feet long, thirty-two inches wide inside by eighteen inches high inside, and two and one-half to three inches thick. The retort had an iron door in front, with bolts to secure it, a dozen one-inch holes on each side just above the bottom, and a six-inch hole at top, which communicated with the chimney. The retort was built in with appropriate brickwork, and was heated by a furnace placed underneath it. When a bright red heat had been attained, the body, supported on a light iron grating, and covered with a shroud soaked with alum, was thrust into the retort, the door in front was closed, and in a few hours nothing remained but ash. After the retort had cooled, the ash was collected and placed in an urn, and was doubtless labelled "Ashes of Baron de Palm, cremated at Little Washington, A.D. 1876." Before placing the body in this retort the fire is allowed to burn quite low, the strong draught takes a current of air through each of the twenty-four one-inch holes in the sides, and a powerful heat being radiated from the walls of the retort upon the dead body, combustion goes on, and the products of combustion are carried by the draught through the six-inch hole into the chimney. Considerable improvements might be made in this apparatus, but these are beyond the scope of this article, although the writer has mentioned the fact to the makers of this retort, the Messrs. Gardner Brothers, of Pittsburgh.

Let us notice now the products of combustion of a dead body. In the *Edinburgh Weekly Scotsman* of Saturday, May 3, 1884, under the heading "Imperial Parliament," in the section "Dead (Regulations) Bill," Sir Lyon Playfair makes the following state-

ments: "The body yields in the furnace the very same gases which it yields from the soil. The time only differs. In the one case, an hour is sufficient; in the other case, twenty years may not suffice. The ultimate processes are not merely similar, they are absolutely identical." Such statements delivered *ex cathedra*, as it were, by a gentleman of Sir Lyon Playfair's scientific and legislative position, are apt to be received by the general public *sine grano salis* and without examination. Nevertheless, the writer presumes to doubt the identity of the processes of burial and cremation even in their ultimate products. In burial the products are carbonic acid, water, ammonia, sulphuretted hydrogen, and phosphoretted hydrogen, the two last being ultimately converted into sulphuric and phosphoric acids. In cremation, if the process of combustion is perfect, the products are carbonic acid, water, nitrogen, uncombined phosphoric acid and sulphurous acid, the last being ultimately converted into sulphuric acid. In cremation, if the process of combustion is perfect, no ammonia whatever is formed, all the nitrogen being liberated as gas. Liebig, "Agricultural Chemistry," in the chapter on "Eremacausis of Substances containing Nitrogen," says, "When azotized substances are burned at high temperatures, their nitrogen does not enter into combination with oxygen;" "and in the same way the substances containing nitrogen give out that element in its gaseous form." Here, therefore, is one very important difference between burial and cremation. In cremation the nitrogen of the organic substances is thrown as gas into the atmosphere to add to the quantity of nitrogen which it already contains. Liebig again, "On the Origin and Assimilation of Nitrogen," writes, "We have not the slightest reason for believing that the nitrogen of the atmosphere takes part in the processes of assimilation of plants and animals." "But there are, on the other hand, numerous facts showing that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element which is conveyed to their roots in the state of ammonia, derived from the putrefaction of animal matter." In short, it is only in the form of ammonia that plants can take up nitrogen at all, whether by their roots or leaves, and that some plants do take it up by their leaves is certain. Everybody, therefore, that is cremated robs either water or atmosphere of so much ammonia, and to that extent the process of cremation is a wasteful interference

with nature's operations. This is one objection to cremation; but there are others.

The incombustible portion of the body, the ash remaining after the process of combustion is completed, is consigned to an urn. This ash consists principally of phosphate of lime, —*bone-earth*; but it contains also the ash of the muscles, the ash of the blood, and the ash of all other tissues and organs. In the urn it is absolutely useless,—it fulfils no function in nature. It has taken the living body perhaps seventy years to collect the few pounds of bone-earth which constitute the inorganic portion of its skeleton. By the process of burial all this bone-earth would ultimately have been returned to the earth from whence it came, or made otherwise, as above indicated, available for the food of man. Cremation robs nature of all this valuable phosphate, a substance without which no cereal plants can live. Here, again, is a wasteful interference with nature's operations. Remark here also the decided *non-identity* of cremation and burial in respect to the disposal of the phosphates.

Beyond the shadow of a doubt hundreds of corpses are every year consigned to the grave, the victims of secret poisoning. These cases have escaped the cognizance of the physician, but occasionally some suspicious *post-mortem* circumstance leads to the disinterment of the victim's body; the toxicologist discovers the poison; the murderer is hanged. Suppose, however, that the body has been cremated. If the poison has been organic, or one of the volatile metals, such poison cannot be found in the ashes, the crime is effectually concealed, the murderer goes scot-free, and even the slight check which the possibility of an investigation would afford has been completely removed by cremation. Here is another serious objection to the practice.

Putting aside all special pleading, in which the literature of this subject too much abounds, the writer thinks that from the foregoing considerations several conclusions may be drawn.

1. Considered merely as a measure of sanitation, cremation, as a means of disposing of the dead body, is perfect when properly performed.

2. As a measure of sanitation, when properly performed and under proper conditions, sepulture, as a means to the same end, is also perfect.

3. As an economic measure, cremation is faulty in the extreme, being wasteful and destructive.

4. As an economic measure, sepulture is

much less faulty than cremation, being, to a certain extent, conservative.

5. As a testificatory measure, cremation cannot be entertained at all, for it completely destroys all physical testimony in cases of crime which the cadaver might afford.

6. As a testificatory measure, sepulture, to a certain extent, is satisfactory, for its tendency is to conserve the physical evidences of crime.

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CHLORIDE OF SODIUM IN THE TREATMENT OF BRIGHT'S DISEASE.

DR. ALLARD MEMMINGER (*New York Med. Journal*, July 31, 1886) recommends the use of sodium chloride in the treatment of Bright's disease. He claims that this drug will produce a decrease in the amount of albumen and an increase in the amount of urea, and a very marked increase in the quantity of chlorides eliminated. He orders 10-grain doses of the chloride in gelatin-capsules three times a day, by preference one hour after or before meals, and directs the patient on the slightest intimation of nausea immediately to resume a recumbent posture, and there remain for an hour or so. The second day of treatment he increases the dose to two capsules three times a day, and every other day he increases by one capsule until the patient is taking five capsules three times daily. About this time he claims that the good effects of the treatment will be apparent, not only from the improvement in subjective and objective symptoms of the patient, but from the improvement in the condition of his urine. Albumen will of course at this period be found still in abundance if the case is at all a grave one. At this juncture Dr. Memminger directs the chloride to be diminished in quantity, and now gives the patient two capsules three times a day, stopping it temporarily if any nausea is produced. If the albumen is again found to increase and the urea and chlorides diminished, large doses are at once resumed. The effects of this treatment are found in the reduction of the albumen, an increase in the urea and chlorides eliminated, and the removal of headache, oedema, low spirits, general weakness, and anæmia. He claims that it is harmless if properly administered; its effects are uniform, and it may be employed as an adjunct to all recognized modes of treatment without detriment to the patient.

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Leading Articles.

THE MEDICAL ASPECTS OF THE NORTH-WEST.

THE importance of Switzerland to Europe as a playground is very great, but in the creation of North America the necessity of some such central spot seems to have been overlooked. This is especially unfortunate, since the temperament of our people leads them more and more to do twelve months' work in eleven months, and during the remainder of the year recuperate from the effects of this folly. Recuperation at a fashionable watering-place is usually as satisfactory in its results as trying to save a candle by burning the lower end. Mental rest, physical exercise, the open air, these are the necessities of the summer-time. The Adirondacks in New York, the North Woods in Maine, offer stamping-ground for the purpose; but to those who would wander among the high mountains, the far-off ranges of the West afford the only hope. The question of a vacation is to the physician a very practical one, both for himself and for his patients. We do not, therefore, hesitate to occupy a few pages in calling the attention of our readers to the far Northwest and its advantages. Moreover,

this region probably presents a very favorable locality for the out-door treatment of consumption, although its claims and advantages seem hitherto to have been overlooked.

Western Dakota is in the northern portion of the dry belt which runs through the United States. It is similar in climate to Colorado, but differs from that State in not being distinctly mountainous, and in its plains not being highly elevated above the sea. There are certain cases of consumption in which the dry, cold air of Colorado acts beneficially, although the latitude and the consequent rarefaction of the atmosphere are trying to the patient. There are as yet, neither in Western Dakota nor in Montana, unless in a few towns, proper facilities for the care-taking of invalids, and for a person in the advanced stage of consumption to attempt to face the hardships of ranche-life would be absurd. The opportunities for occupation in Dakota, and still more in Montana, are, however, at present very good, and we would direct persons in the incipient stages of consumption to these Territories for permanent location. Montana contains numerous ranges of mountains, but its inhabited places are rather in the plains, and most of them are of lower altitude than are the Colorado resorts. The winters of Montana are also tempered by the so-called Chenook winds, which, blowing from the west, are at once so mild and dry that they lap up the snow and in a few hours leave bare the whole country.

In Dakota blizzards are more to be feared than in Montana, and the Chenook winds are less frequent and pronounced, although the inhabitants of Western Dakota claim that these reviving winds do reach them. Any person with feeble lungs settling in Dakota must either provide for staying in-doors during the existence of blizzards, or for living in the so-called Bad Land Country. The Bad Lands stretch over a wide amount of territory, running north and south some hundreds of miles, with a breadth of fifty or more miles east and west. They are composed of innumerable bluffs of earth two or three hundred feet high, fantastic in form, some conical, some truncated, some with broad tops, separated by narrow gulches, or, more rarely, by meadows a few hundred yards in width, but always so closely approximated that under their shelter cattle and people are almost as protected from the wind as within four walls. Last winter in the Bad Lands the thermometer fell as low as 60° below zero, but owing to the protection from the winds and the dry-

ness of the atmosphere this intense cold was so little felt that a calf dropped on Christmas-day, and left without shelter or any care, is not only healthy but has well thriven, and the manager of the ranche told us that only on three days had he found an overcoat necessary in riding.

In 1806, John Coulter left the Lewis and Clarke expedition to go to the Missouri River to hunt and trap. Escaping from the Black-foot Indians, he lived for some time with the Bannock Indians, and in 1810 returning to St. Louis, gave an account of wonderful spouting springs and boiling caldrons which he had seen in the Rocky Mountains. By this he acquired a great local notoriety as the chiefest of modern liars, and the locality which he described was derisively spoken of by hunters as "Coulter's Hell." In 1844 one James Bridger penetrated to the locality described by Coulter, and on his return was no more believed than had been his predecessor. It was not until 1863 that the first credited description of the region now familiar as the Yellowstone Park was given by Captain De Lacy. The more recent history of this wonderful country is now known of by all men. We do not propose to inflict upon our readers any description of it at all, but only to say that after having wandered over the greater part of these United States except the California region, there are, in our opinion, only two places that are worth the trouble of getting at them: one is Niagara Falls, and the other the Yellowstone Park. Possibly the Mammoth Cave might be added to the list. The wonders and beauties of the Yellowstone can scarcely be exaggerated.

The amount of hot water that is going to waste in the Yellowstone region is sufficient to fill the heart of a Chinese laundryman with an agony of sorrow, and to make an American sanitarian look with pity and disgust upon the small springs of Arkansas and upon the rest of the world with profound contempt. There are in the Park simply thousands of hot springs of all magnitudes,—some mere pellucid pools, some trickling fountains, some spouting masses of water almost sufficient to supply a city. And it can scarcely be otherwise than that in the future some of these springs will be found to possess very valuable medicinal properties.

Generally speaking, most of the springs can be divided into two sets,—the calcareous or calcic and the silicious. The Mammoth Hot Springs is the most important of the calcareous waters. It is really a large collection of

springs, which, commingling with one another, have by their conjoint effort deposited a mountain of carbonate of lime. Two of these springs have been analyzed by Dr. Henry Leffmann, of Philadelphia, with the following results. (See U. S. Geological Survey, 1878, part ii. page 389.) The Cleopatra Spring, water strongly alkaline, temperature 154°.

	Grains to imperial gallon.
Sodium chloride.....	13.496
Sodium sulphate.....	35.504
Calcium sulphate.....	13.587
Calcium carbonate.....	24.850
Magnesium carbonate.....	7.455
Silica.....	3.500
	<hr/> 98.392

Spring No. 17. Temperature, 165°. This may be arranged as follows:

	Grains to imperial gallon.
Sodium sulphate.....	34.370
Sodium chloride.....	18.900
Calcium carbonate.....	17.920
Magnesium carbonate.....	2.170
Silica.....	3.360
	<hr/> 76.720

A greater number of the Yellowstone springs are silicious, and deposit immense masses known as geyserite, which contains ninety per cent. of silex. An analysis of one of these, the Opal Spring, a silicious water in the Gibbon Geyser Basin, by Dr. Leffmann, gives the following result:

	Grains to imperial gallon.
Sodium chloride.....	82.180
Calcium sulphate.....	3.220
Silica.....	53.760
Calcium chloride.....	4.060
	<hr/> 143.220

The analysis of the Jug Spring of the Fire-Hole Geyser Basin resulted as follows:

	Grains to imperial gallon.
Sulphuric acid.....	1.400
Chlorine.....	19.180
Silica.....	14.560
Calcium.....	Traces
Sodium.....	34.440
	<hr/> 69.580

These analyses show that the springs of the Yellowstone are rich in mineral matter. But they do not fairly represent the resources of the region. Many of the waters are certainly strongly alkaline, and the immense masses of sulphur which are to be found in certain portions of the Park, as well as the deposits around many of the springs, show that these

waters are, some of them, also strongly sulphurous. The so-called Sulphur Mountain is a large butte full of small crystalline deposits of sulphur, and with sufficient sulphur emanations coming up through which to make liquid deposits upon the warm ground at the top,—drops of melted sulphur, which might well be spoken of as drops of golden dew.

A member of the United States Geological Survey told us that one of the springs is very rich in boric acid, and that a number of them contain a notable percentage of arsenic. Near the Mammoth Hot Spring is a lake of warm water in which the invalid might well disport himself for hours; suiting the temperature to his needs by shifting his position towards or away from the thermal springs which feed the waters.

The only place that we know of in the Northwest which is at present prepared for the treatment of disease by the use of water and bathing is that which is known as Hunter's Springs. This is situated a few hours of railroad riding this side of Livingston, near the Yellowstone River, whose rapid waters would afford for the invalid much amusement in the taking of large trout. There are three or four distant springs which furnish a very abundant supply of water both for drinking and bathing purposes. The hotel, which is just finished, is primitive but sufficient. There is a large bathing pool which reminded us forcibly of that at the famous baths of Luck in Switzerland, besides numerous bath-tubs, and all necessary arrangements for private bathing. The heat of the main spring is 168° F., and it has a specific gravity of 1.03 at 60° F. No analysis of it has ever been published, but we are enabled to give an original analysis made by Prof. Lehnen, of St. Paul:

	Grains to imperial gallon.
Solid contents.....	21.76
Magnesium carbonate.....	3.35
Ferrous carbonate.....	.16
Calcium carbonate.....	1.65
Potassium chloride.....	2.10
Sodium chloride.....	.15
Potassium sulphate.....	1.68
Sodium sulphate.....	1.38
Magnesium sulphate.....	7.07
Calcium sulphate.....	2.01
Alumina and silica.....	2.21
	21.76

The amount of solid matter in the Hunter's Spring water is not very great, but there are more salts than are contained in the Hot Springs of Arkansas, and it is probable that syphilitic, rheumatic, and skin affections could

be very successfully treated by it. The spring already enjoys a considerable repute in the Territory of Montana, and at the time of our visit there were some eighteen or twenty people undergoing treatment.

Before the thermal springs of the Northwest can attract invalids from distant places much greater development must certainly take place, and we strongly urge upon the Northern Pacific Railroad authorities the policy of furthering such development. It would certainly pay the railroad, then, to have a thorough exploration of the springs of the Park made at their own expense. The United States government, however, as owner of this property, ought to develop it.

Attached to the present United States Geological Survey there should certainly be a chemist, who should have a sufficiently well-furnished laboratory in the Park to make careful studies on the spot of a large number of these innumerable hot springs. At present there are no facilities in the Park for the reception or care of health-seekers, although there are large general and well-managed hotels, and to them sanitariums could readily be attached.

ON THE USES OF IODOFORM IN VENEREAL DISEASES.

THE employment of iodoform in the treatment of venereal affections, though advocated as far back as in 1857 by Von Maitre, did not attain any repute with the profession until the disclosure of the eminent antiseptic virtues of the drug created a new and rationally founded base for its therapeutic exhibition. The fall of the previously excessively high price of the drug taking place about the same time aided of course no little the growing popularity of the remedy.

A decade or more having passed since the general introduction of iodoform into the therapeutics of venereal diseases, a critical review of the results of its clinical trials obtained thus far will be a study both timely and instructive.

Dr. Max Brockhart, treating of the same subject in the *Monatshefte für Praktische Dermatologie*, No. 1, 1886, has collected all pertinent literary material with such care and painstaking, that no abler guide could be selected for our discussion. We cannot, of course, view any other aspects of the proposed subject than those pertaining directly to the therapeutic practice. The following

divisions recommend themselves for convenience' sake :

I. Iodoform in the treatment of gonorrhœal affections.

II. Iodoform in the treatment of soft chancres and buboes.

III. Iodoform in the treatment of syphilis.

I. IODOFORM IN THE TREATMENT OF GONORRHOËAL AFFECTIONS.

Watson Cheyne* in 1880 first proposed iodoform as an application in gonorrhœa. He employed iodoform bougies made from cacao butter, with the addition of eucalyptus. This author claimed that by allowing the bougie to remain in the urethra for four to five hours daily, and by using astringent and antiseptic injections besides, the gonorrhœal inflammation could readily be controlled in seven to ten days. Campana† recommended in the first stage of an acute gonorrhœal urethritis an injection consisting of 6 dr. of iodoform and 3 grains of carbolic acid in 3 oz. of glycerin and 1 oz. of water. The researches of Mandl, Tarnowski, Keyes,‡ and Bockhart, however, could not verify the observations of Cheyne and Campana, and it soon became a therapeutic maxim that iodoform exerted not the slightest favorable influence over gonorrhœal inflammations of mucous membranes. Indeed, Bockhart even ascertained that a gonorrhœa of females treated exclusively with iodoform lasted longer than the cases treated with the usual disinfectant and astringent solutions.

Gonorrhœal epididymitis has also and even sooner than gonorrhœal urethritis been treated with various preparations of iodoform. Alvares proposed in 1877 the iodoform ointment, later Kurz the glycerite of iodoform, and finally Pape and Fischer the iodoform plaster. All of these authors claim to have obtained satisfactory results with iodoform in epididymitis, though Bockhart's experience could again not confirm them.

In erosions and ulcers of the cervix, however, such as are apt to follow a chronic gonorrhœa, iodoform, as all authors agree, renders the best of services. Dr. Wolf, of Würzburg, has the merit of having established a method of applying iodoform in these lesions which, in simplicity and promptness, surpasses all others. He fills little gauze sacks of the size of a chestnut with finely-pow-

dered iodoform, and places them on the seat of the affection, where they are retained for twenty-four hours by means of cotton tampons. Previously the vagina, especially its cervical portion, is carefully washed out with two per cent. solutions of carbolic acid. Thus treated, even large erosions and ulcers disappear often in two to three weeks. To summarize, then, the first portion of our discussion, we may say that iodoform is of no service whatever in the treatment of gonorrhœal inflammation, but can claim for it a curative influence over ulcers and erosions of the cervix.

II. IODOFORM IN THE TREATMENT OF SOFT CHANCRES AND BUBOES.

Isard§ and Lazansky|| claim the credit of having first called attention to the advantages derived from iodoform in the treatment of soft chancres. Isard laid particular stress upon the fact that the new remedy produced no pain by its application, and that compared with the formerly used means, its action was prompt and quick. He employed iodoform both as powder and in form of suspension in alcohol and glycerin (iodoform, 45 grains, alcohol, 2½ dr. ; or, glycerin, 1 oz.), the former in superficially seated ulcers, the latter when cavities or concealed regions were to be reached. Lazansky introduced still another form of its application, viz., an ethereal solution (1 : 15 to 30), which is especially eligible when a protracted irrigation,—as in phagedenic ulcers of the anus,—is desired. Tarnowski noted that, under the influence of the iodoform treatment, the ulcers rarely assumed a phagedenic¶ nature, and that by the rapid elimination of the specific detritus the danger of auto-infection was materially lessened. Nearly all observers agree that treated with iodoform the soft chancre loses in about two weeks its contagious character and enters the stage of reparation. In small chancres a strong ethereal solution, applied three times daily, will give the best results ; in larger ones, Unna's ether-spray or the powder-dressing** recommend themselves. Unna and Bockhart declare that the ethereal solution of iodoform, providing the ulcer with a suitably thin layer of the drug, gives better results than the powder itself. In soft chancres sit-

§ Nouveau Traitement de la Maladie vénérienne par l'Iodoforme. Paris, 1871.

|| Das Iodoform und seine therapeutische Verwendung, *Viertelj. f. Der. u. Syph.*, 1875.

¶ Or diphtheritic.

** Changed every twenty-four hours.

* *Brit. Med. Journ.*, 1880, and *Lancet*, 1882.

† *La Salute*, 1883.

‡ *Journ. of Cut. and Ven. Dis.*, 1883.

uated in the phimotic prepuce, Isard's suspension of iodoform in alcohol and ether, as stated above, is a choice application in phagedenic or diphtheritic ulcers; the powder is preferable, and in chancres located in the urethra iodoform bacilli are indicated. The introduction of Unna's grated iodoform-mull into the therapeutics of the soft chancre (*vide Monatshefte für Praktische Dermatologie*, 1884, p. 242) deserves an especial mention as a decided progress in the technique of dermatological practice. To epitomize the above, we may assume from the exceedingly rapid and favorable action of iodoform upon all kinds of soft chancres that the drug is a specific against the virus of the soft chancre. At least it is certain that no other drug, if it be salicylic acid, resorcin, or nitrate of bismuth, can even approximately be compared with iodoform in healing effects upon the soft chancre. We can also add that these effects do not refer to the mechanical absorbent action of the powder-dressing, for other powder-dressings, such as those of nitrate of bismuth or oxide of zinc, do not have the same curative influence. We are compelled to believe in a chemical influence of the iodoform upon the virus of the soft chancre.

In the therapeutics of suppurating buboes resulting from soft chancres iodoform claims the character of a sovereign remedy. Isard and Petersen* even credit the drug with abortive or preventive virtues regarding this suppurative inflammation, the former employing for the purpose iodoform ointment, the latter iodoform collodion. Still, this abortive power attributed to iodoform is not universally acknowledged. Very certain, however, is it that suppurating buboes under the iodoform treatment heal twice as rapidly as under the old forms of treatment. Under an exactly applied iodoform dressing, and strict observance of antiseptic precautions, the opened bubo never becomes phagedenic, diphtheritic, or chancrous in nature.

The principal methods of applying iodoform in suppurating buboes deserve to be especially alluded to:

1. Lazanski puts iodoform into the disinfected wound, and applies cotton lint (charpie), caoutchouc-paper, and a roller-bandage over it, changing the dressing every twenty-four hours.

2. Martini employs precisely the same method, with the addition of scraping the wound with the sharp spoon.

3. Petersen's plan is undoubtedly the most perfect one. He employs what is known as the occlusion-dressing, adding pressure to the dressing, as stated above. In this dressing flannel bandages only are used. With a perfectly fitting occlusion-dressing the patient is well able to walk about with impunity.

Hence the conclusion to be arrived at from the foregoing statements is that iodoform is an unexcelled remedy in suppurating inguinal buboes, and that it is best applied by the plan proposed first by Petersen.

III. IODOFORM IN THE TREATMENT OF SYPHILIS.

Iodoform has been tried partly as a substitute for mercury by those opposed to the mercurial treatment of syphilis, and partly in place of iodide of potassium in the treatment of the tertiary forms of syphilis. The estimation of various observers of the value of iodoform as an antisiphilitic remedy varies materially. Von Maitre recommended first its internal use in syphilis, and claimed that 45 grains could be ingested daily with impunity. Davenport† gave it in secondary syphilis, together with iron. Lazanski gave daily to twenty siphilitic patients (tertiary form) six to eight pills each, consisting of $1\frac{1}{2}$ grains of iodoform, and pronounced the action of the drug very efficacious. Moleschoff,‡ likewise, eulogized iodoform in syphilis, and called attention to the fact that this drug is much more slowly eliminated from the economy than mercury, and is for this reason therapeutically more active than the latter.

Other authors, however, like Zeissl, Strokowski, Tarnowski, and Mracek, after careful and numerous observations, have come to the conclusion that iodoform given alone internally in syphilis is but little reliable and useful. It is to be added that the drug causes certain secondary symptoms, such as gastric disturbance, vomiting, an acne-like eruption, and nervousness, rendering its exhibition practically ineligible. Although the percentage of iodine contained in iodoform is much larger (ninety-six per cent.) than that contained in iodide of potassium (seventy-six per cent.), it is, nevertheless, possible to introduce into the system by the latter drug in a short time far greater quantities of iodine than by the former. Besides, iodoform cannot be taken with impunity in larger daily doses than 15 grains, while of iodide of potassium much greater quantities are well borne.

* *Monatshefte*, 1883, No. 10.

† *Boston Med. Journ.*, 1873.

‡ *Wien. Med. Woch.*, 1878.

The results obtained with subcutaneous injections of iodoform, as proposed by Bozzi in 1870 and Thomann* in 1881, are sufficiently satisfactory to engage our interest. The latter employed the glycerite of iodoform (6 to 20), and iodoform dissolved in oil of almonds† (0.3 to 6), using as an average dose as much as 12 grains of iodoform. Both in recent and in tertiary syphilis these authors obtained very gratifying results, 3 to 4 dr. of the drug being required for the cure of tertiary lesions. The local reaction after injections of iodoform is immaterial; the pain soon passes away, as do the induration and redness of the place of injection. An abscess has been recorded in only a single instance. Neumann used besides glycerin still other vehicles for his subcutaneous injections of iodoform, such as ether (1 to 6), castor oil (1 to 15), and ether and olive oil (5 aa).

Neumann found by experiments on animals that from the glycerite of iodoform $\frac{1}{3}$ grain of iodoform, and of the ethereal solution $\frac{1}{3}$ grain of iodoform were resorbed daily. In a case where Mracek had given in thirteen days $1\frac{1}{2}$ dr. of iodoform, he noted the elimination of the drug in the urine for a period of forty days. In another case, Thomann found iodine in the urine forty-three days after the last injection of the glycerite of iodoform. These observations demonstrate that the glycerite of iodoform applied subcutaneously acts similarly as calomel applied hypodermically: from the drug deposited into the cellular tissue small quantities are being constantly and for a long time dissolved, and enter the circulation. This peculiar action of iodoform renders the drug particularly eligible in the light tertiary forms, while in the grave gum-mous processes, necessitating the rapid introduction of larger quantities of iodine, iodide of potassium, being more rapidly and in greater quantities resorbable, is far preferable. In conclusion, the beneficent action of iodoform in syphilitic neuralgia is to be mentioned. Daily doses of 15 grains of iodoform, taken in pill form, are regarded as a promptly-acting remedy.

To resume the above, we find iodoform as an antisiphilitic remedy inferior to iodide of potassium, surpassing the latter only in syphilitic neuralgia. Employed subcutaneously, however, the drug, especially in the light tertiary forms, produces a far more constant and

effective an action on the organism than iodide of potassium.

THE PHYSIOLOGICAL ACTION OF IODOFORM.

Our knowledge of the physiological action of iodoform has in the last few years been materially enriched by the labors of Prof. Binz‡ and other German observers. Let us review in brief the essential features of the physiological action of the drug. Placed upon an ulcerating surface, iodoform is gradually dissolved by the fatty substances present in that locality, and liberates iodine in presence of oxygen and light or of oxyhæmoglobine and living cells. It is to the thus continually generated free iodine that the antiseptic and antibacterial virtues of iodoform are to be ascribed. The action of iodoform upon the blood-corpuscles is a very singular one: it prevents their emigration from the blood-vessels by paralyzing the protoplasm of the blood-cells, and besides, prevents the formation of giant-cells. The analgesic effects of iodoform upon ulcers are explained by Binz as being due to a paralysis of the axis cylinder of the exposed nerve termination produced by the liberated iodine. The iodine enters also the juices of the body and associates with their albuminous constituents, the thus formed albuminate of iodine being, however, soon decomposed into an iodide and an iodate. In tissues of an acid reaction (the cortex of the brain and gastric mucous membrane) iodine regains its former state of integrity, and again reacts upon the cells of the part. This explains the partly irritating and partly depressing influence of iodoform upon the cervical cortex and its tendency to provoke serious gastric disturbances. Experiments made upon animals revealed fatty degeneration of the heart, the liver, and the kidneys as the result of the action of iodoform. Even after the ingestion of large quantities of iodoform, the resorption from the intestinal tract is very limited as compared with the resorption proceeding from granulating surfaces and wounds. In the urine iodoform appears as an iodide and an iodate. This elimination proceeding, however, very slowly, the action of the drug upon the economy is evidently a prolonged one.

We cannot conclude our discussion without

* *Centralblatt für die Med. Wiss.*, 1881.

† Solutions of iodoform are to be preserved in a dark bottle, else iodine will be liberated, and applied hypodermically will prove highly irritating.

‡ Binz and Möller, *Über das Iodoform und über Iodsäure*, *Arch. f. exp. Path.*, 1877; Binz, *Toxicologisches über Iodopreparate*, *Arch. f. exp. Path.*, 1880; Binz, *Virchow's Archiv*, 1882, vol. lxxxix.; Behring, *Über Iodoform Intoxicationen*, *Deutsche Med. Woch.*, 1882.

referring with a few words at least to the intoxication phenomena, as occasionally recorded after the application of iodoform. In the first place we mention the acne not rarely observed after the internal and subcutaneous employment of iodoform, resembling closely the acne produced by the internal use of iodide of potassium. Besides this acne a peculiar exanthematous dermatitis is often observed after the external application of the drug, especially in presence of a certain predisposition on the part of the patient. This eruption is readily cured by a dressing with argillaceous earth, or with a two per cent. solution of carbolic acid in alcohol. Grave cerebral intoxications, such as frequently described by surgical writers, occur but rarely in the treatment of venereal affections, unless it be in presence of the idiosyncrasy mentioned above. Besides, iodoform is no longer used in such large quantities as was practised in the past. Oberländer* reported two grave intoxications with iodoform which deserve to be noted. Two syphilitic patients, who had received 10 dr. of iodoform in eighty days, *i.e.*, 75 grains in seven days, showed threatening cerebral symptoms, such as coma and collapse, which persisted for a long time, and finally passed away.

To disguise the repulsive odor of iodoform many agents have been proposed, among which we mention cumarine, the tonga-bean, the oil of peppermint, the oil of bitter almonds, Peruvian balsam, Muscat balsam, tannic acid, and recently pulverized roasted coffee.† This agent being itself an antiseptic, and incorporable with iodoform in any proportion, is undoubtedly the safest, as it is the most effective of all substances recommended for the disguise of the odor of iodoform. If the chancrous ulcers of the penis are treated with Unna's grated iodoform plaster-mull, the taste of the drug is easily disguised by fixing a layer of odorized cotton (with cumarine) over the plaster.

ON ANTIFEBRIN, THE NEW ANTIPYRETIC.

FROM Prof. Kussmaul's clinics at Strasburg Drs. Cahn and Hepp send the good news of the discovery of a new and great antipyretic into the professional world. We abstract from the *Centralblatt für Klinische Medizin*, August 14, 1886, a *résumé* of the properties and action of antifebrin.

* *Deutsche Zeitschrift für Praktische Medizin*, 1878.

† Opler, *Centralblatt für Chirurgie*, 1885, No. 30.

"A happy incident," the authors say, "has placed in our hands a preparation which was found to possess excellent antipyretic virtues." A chemical examination proved the drug to be a long-known chemical body which owns the formula of $C_6H_5NHC_2H_5O$, and belongs to the group of phenylacetamides or acetanilides. It was prepared as far back as 1853 by Gerhardt (*Annalen*, lxxxvii. 164), by the action of aniline upon acetylchloride or anhydrous acetic acid. Antifebrin is a white, crystalline, and odorless powder, slightly pungent, almost insoluble in cold water, sparingly soluble in hot water, but readily so in alcohol. It melts at $113^{\circ}C$, and distils unchanged at $292^{\circ}C$. It owns neither acid nor basic properties, and strongly resists the majority of reagents.

Numerous experiments on dogs, guinea-pigs, and rabbits have convinced the named observers that the drug can be ingested in relatively large doses without provoking any toxic symptoms, differing in this respect materially from aniline ($C_6H_5NH_2$), with which it is chemically closely allied. The temperature of normal animals is not influenced by the drug.

Cahn and Hepp have tried the new antipyretic in the following twenty-four cases :

	Cases.
Typhoid fever.....	8
Erysipelas.....	5
Acute articular rheumatism.....	2
Pulmonary phthisis.....	4
Abscess of the lungs.....	1
Fever in leucæmia.....	1
Pyæmic fever.....	1
Septicæmia.....	1
Pneumonia migrans.....	1

The remedy was given in single doses of 4 to 15 grains, stirred up in water, dissolved in wine, or enclosed in wafers.

The maximum dose given in twenty-four hours was 31 grains. The proper size of the single dose cannot, as in all antipyretics, be determined *a priori*, but depends upon the type, the gravity, and stage of the affection. It is safe to regard 4 grains of antifebrin as equal to 16 grains of antipyrin, regarding time of appearance, duration, and magnitude of the antipyretic action. Consequently it will be seen that antifebrin, however scantily soluble, acts as quickly, and four times stronger, than antipyrin. As yet the drug has never failed in the hands of the Strasburg clinicians.

The following illustrates the mode of distribution of the new remedy in several cases, and at the same time allows of a comparison with antipyrin regarding antipyretic power.

Typhoid Fever. Workingman, aged 19 Years.

	July 3, 7th day.	July 10, 14th day.	July 11, 15th day.	July 12, 16th day.
7 o'clock.....	39.2° C..... Pulse. 88	39.8° C.	39.7° C.	39.3° C.
10 "	40.0° C.	40.2° C.	40.2° C.	39.9° C.
12 "	40.2° C., 7 gr. anti-febr.	40.2° C., 7 gr. antifebr.	40.4° C., 32 gr. antipyr.	40.4° C., 7 gr. antifebr.
2 "	38.6° C..... 88	38.8° C.	38.5° C.	38.8° C., 7 gr. antifebr.
3 "	37.8° C., 4 gr. anti-febr.	38.7° C., 4 gr. antifebr.	32 gr. antipyrin.	
4 "	37.8° C..... 68	38.9° C.	39.2° C.	37.8° C.
5 "	38.4° C..... 68			
6 "	39.0° C..... 80	40.4° C.	40.2° C.	40.0° C.
7 "	40.0° C..... 88			
8 "		40.3° C.		39.9° C.

Typhoid Fever. Woman, aged 39 Years.

	July 20, 12th day.	July 21, 13th day.	July 22, 14th day.
7 o'clock	39.4° C.	39.0° C.	39.3° C.
10 "	38.9° C., 4 gr. antifebr.	38.8° C., 16 gr. antipyr.	39.7° C., 4 gr. antifebr.
12 "	37.2° C.	37.8° C.	38.7° C.
2 "	37.2° C.	37.5° C.	38.5° C.
4 "	37.8° C., 4 gr. antifebr.	38.4° C.	39.4° C., etc.
6 "	38.4° C.	39.1° C.	
8 "	37.8° C.		
10 "	37.7° C.		
12 "	39.0° C.		

Phthisis Pulmonum. Woman, aged 22 Years. (Patient received Antifebrin for Twelve Days and Antipyrin for Two Days.)

	July 15.	July 16.	July 17.	July 25.	July 26.
7 o'clock.....	38.4° C.	38.7° C.	38.5° C.	37.3° C.	37.3° C.
10 "		38.8° C.	38.6° C.	38.6° C.	38.5° C.
12 "	39.1° C., 4 gr. antifebr.	39.1° C., 16 gr. antipyr.	38.6° C.	38.3° C., 16 gr. antipyr.	38.9° C., 4 gr. antifebr.
2 "	37.8° C.	37.6° C.	39.2° C., 4 gr. antifebr.	37.8° C.	37.8° C.
4 "	37.0° C.	37.8° C.	38.7° C.	37.8° C.	37.4° C.
6 "			37.4° C.	38.5° C.	37.6° C.
7 "	39.6° C.	38.6° C.			
8 "			36.8° C.	38.7° C.	37.9° C.

As seen from this table, the antipyretic action of antipyrin sets in about one hour after its exhibition, reaches its maximum after about four hours, and passes off in from three to ten hours, according to the dose employed. In doses sufficiently large to reduce a high febrile temperature to the normal status or even lower, the apyrexia persists usually four to eight hours. The fall of temperature is accompanied by reddening of the skin and moderate perspiration.

In the reascent no rigors were ever observed, though in some instances the patients had—as after the use of antipyrin—sensations of cold. Simultaneously with the fall of temperature, the observers noted a considerable

reduction in the frequency of the pulse and an increase in the arterial tension.

The gastro-intestinal tract bears the new remedy undoubtedly well, for in no instance was there any nausea, vomiting, or diarrhœa observed. In several cases, on the contrary, the improvement of appetite following the use of the drug* was quite apparent.

Notable were also in a number of cases the great thirst of the patients and the profuse diuresis appearing during the period of apyrexia. No patient complained about the med-

* In all probability due more to the relief brought by the apyrexia than to any especial action of the drug on the digestive tract.

icine, and the general subjective state of health was quite favorable during the use of it. In one of the cases of rheumatism antifebrin caused a prompt relief from very troublesome pains in the joints. The only symptom which at first startled the experimenters was a peculiar cyanosis appearing in some patients on the face and extremities, which appeared and disappeared simultaneously with the apyrexia, without causing rigors or any other symptoms. In some instances the patients grew somnolent during the apyretic period.

Besides the advantages above alluded to, viz., prompt action in small doses, absence of secondary symptoms, and comparatively slight transpiration, the new remedy commends itself also on account of its cheapness.*

It is theoretically interesting to find that this antipyretic belongs to a chemical group wholly different from that which includes the other antipyretics, which are either phenols (carbolic acid, hydrochinon, resorcin, salicylic acid), or belong to the chinoline order (chinolin, kairin, antipyrin, quinine, thallin).

Antifebrin is a neutral body, far removed in chemical composition from either of these groups.

KOLA NUT.

WE have in several previous issues of the GAZETTE called attention to the action of the kola nut, and a paper recently published by Dr. N. Hudson (*Med. Times*, June 26, 1886) still further encourages more definite trials of this remarkable agent. Dr. Hudson reports a case of intermittent and irregular heart's action, with dyspnoea and faintness, occurring as a consequence of endocarditis in a rheumatic subject, in which the use of about 150 grs. of kola paste, taken once or twice a day, in hot milk, prepared like chocolate, caused great relief. The heart's action became more regular, dyspnoea and faintness disappeared, and the violent headaches to which the patient had been previously subject were prevented. The employment of the kola seemed to be satisfying to the appetite, and the bodily weight increased from ninety-eight to one hundred and five pounds. No marked change was observed in the character of the urine, the quantity voided being somewhat increased, but the total quantity of urea excreted remaining at 10 or 12 grammes daily. The ac-

tion of kola is generally attributed to the caffeine which it contains, but Dr. Hudson states that in this case both caffeine and convallaria had been employed without success, while the action of digitalis was only temporary and palliative.

NOTE ON HYPNONE.

URETHAN, Jaksch's discovery, announced last year with so much *éclat* and auspicious anticipation, has been unable to establish itself in the faith of the profession, and it is little likely that the coveted sanctum of any Pharmacopœia will ever open itself to a remedy of so uncertain and unreliable a nature. Hypnone, the successor of urethan, appears to be no luckier than the latter. It has figured in the medical journals for some time, was complimented on its felicitous name, and—"the rest is silence."

Hirt and Moebis, of Breslau, went to the expense and trouble of instituting exhaustive experiments with hypnone, giving the drug in as large doses as 7 grains, and were naturally rather grieved to find the results obtained wholly negative, especially in view of Jaksch's loud claims as to the virtues of the drug. The experimenters write to the *Breslauer Artliche Zeitschrift*: "The results obtained with hypnone were in every instance positively illusory, and the drug ought to attract no more attention from the profession."

The above sentence will no doubt be condemned by other observers, but it seems as if the drug is doomed to oblivion.

THE NEW EDITION OF DR. FLINT'S PRACTICE.

WHEN a medical book has been the chief guide for many years for the practitioners of at least one continent, its fate upon the death of its author becomes a matter of general concern. Usually the book falls into the hands of an editor. Occasionally the man selected has sufficient nerve and ability to swallow the book, assimilate it, and send it forth with the stamp of his own personality blending with and overriding that of the original author. Under these circumstances the work becomes a new book, and may be endowed with a life for another generation. Usually, however, the editor prunes, interjects, and variously alters the old favorite, so that it becomes like a tree which has not

* Kalle & Co. sell a moderately pure article for thirty marks per kilogramme.

grown by the physiological process of interstitial deposit, but has had grafted on it here and there a new limb, and finally produces an abundance of discordant fruit. Such an alteration of a great medical classic is a woful mischance: ruinous to the reputation of the original author; misleading to the rising youth of the profession. As Dr. Austin Flint, Jr., however much of fame he may have achieved in other lines, is not known as a clinician, on reading the announcement of a new edition of his father's *Practice of Medicine* we had greatly feared that the book would be found to have suffered at the hand of some alien editor. It is, therefore, with great pleasure that we learn that Dr. Austin Flint himself completed the revision of the book before his death. We trust that the sale will be both extensive and rapid, and the volume in its perfected form will be widely placed upon the shelves of our readers as the monumental life-work of its great author. We also hope that in the future the publishers will take care that its shapeliness is not defaced by editorial chisellings or bracket-enclosed excrescences.

According to our thinking, Dr. Flint was not a man of genius, although endowed with good judgment and excellent powers of reasoning. A man of marked ability, but not of originality, he achieved by infinite painstaking labor. It is stated that the basis of his practice was an unbroken series of records of cases, in private practice and hospitals, begun in 1833 and continued until his death. The mere manual labor of writing the sixteen thousand nine hundred and twenty-two folio pages of manuscript was not a little thing. And it is said that these pages are all in Dr. Flint's own handwriting.

Reports on Therapeutic Progress.

THE PHYSIOLOGICAL TREATMENT OF CHOLERA AFTER SEMMOLA.

We abstract from a recently published work of SEMMOLA ("Nuove Ricerche terapeutiche sul Cholera Asiatica")—in which this well-known Italian clinician has laid down the clinical and therapeutic experiences gathered during the recent Italian epidemic of cholera—his views on what the author calls the "physiological treatment of cholera." Semmola holds that no cure can ever be expected from any medication directed specifically against the comma-bacillus, and also warns of too

heroic a therapeutic interference with the symptoms of the premonitory and the algid stages.

A physiological treatment, in the judgment of the author, is one which is directed towards raising the vital energy of the body, so as to endow the same with a higher power of resistance against the disease without injuring the entire system by the biochemical action of pharmacal agents.

The main features of this treatment are the following:

1. Absolute rest of the affected organs—viz., the gastro-intestinal tract—by observing a strict fasting on appearance of the first diarrhoea stools. As long as the diarrhoea persists no food whatever is to be taken. Over six thousand clinical observations in Naples have shown that even 5 to 6 teaspoonfuls of bouillon, given prematurely (*i.e.*, before the stoppage of the diarrhoea), sufficed to reproduce the gravest symptoms, such as algidism and asphyxia. After the disappearance of diarrhoea and vomiting, milk may be given in very small quantities.

2. Timely excitation of the physiological powers by therapeutic or, rather, by physiological means. The best of these are undoubtedly repeated warm baths. To prove beneficial the baths must, however, be given in the first period of the disease, before any sign of algidism has set in. The application of the warm bath in cholera has been in vogue also in former times, but never yielded any benefits, as it was only employed in the algid stage of the affection. The warm bath is not alone useful, as was held formerly, on account of the supply of heat to the cold surface of the body,—a mere physical process,—but also and particularly on account of the physiological influence it exerts on the economy. The warm bath excites the peripheral nervous system, and at the same time, by reflex action, the centre of circulation. The consequence of this excitation is an harmonious restoration of the functional physiological relations between the surface of the body and its internal apparatus, especially those of the digestive tract. True, this biological process can only be realized in the first stage of the disease, when the biological relations between the superficial and internal organs have not yet been essentially altered or broken off altogether.

Through diaphoresis the bath favors besides the elimination of toxic substances from the system, which by affecting the various nerve-centres cause ominous alterations in the se-

cretory, vaso-motoric, and general oxidation processes. If necessary, the bath can be repeated every one to two hours. After the bath the patient is to be wrapped up in woollen blankets, and is to be given warm aromatic and weak alcoholic drinks. It is well to give also small doses of opium (laudanum, liqueur de Batteley, chloridine), in order to render the nervous centres less susceptible for the toxic principles and in order to reduce the increased intestinal secretion. Opium, given at the proper time, aids and supplements the physiological treatment.

ON IODOL, THE NEW ANTISEPTIC.

Two recently-published papers on iodol, one by G. SCHMIDT ("Das Iodol, ein neues Antisepticum," *Berliner Klinische Wochenschrift*, 1886, No. 4), and the other by FR. PAHL (*Untersuchungen über Iodol, Diss.*, Berlin, 1886), disclose some additional facts in reference to this new antiseptic agent. Schmidt employed iodol at the university clinics of Heidelberg in the following forms: 1. As a powder, applied to the wound like iodoform; over it a compress of argillaceous earth is fixed. The iodol formed no scab with the secretion, the secretion itself was odorless, the granulations abundant, and the healing of necrotic ulceration-surfaces satisfactory. 2. As a solution, 1:16 alcohol + 34 glycerin, intended for tampons in carcinomata of the uterus and rectum, also for injections in fistulas and ulcerative cavities. 3. As iodol gauze.

Schmidt expresses himself thoroughly contented with the results obtained with these various modes of iodol application, and lays particular stress upon the absence of all intoxication phenomena in the use of the new antiseptic. He believes, however, that the granulations obtained from the use of iodoform are more luxuriant than those appearing after the employment of iodol.

Pahl, who conducted his researches on iodol in the Pharmacological Institute at Berlin, commends, likewise, the use of iodol, especially in view of its "comparatively slight toxic qualities." His experiments made with iodol on various animals invite our particular interest. If large doses are given to animals, Pahl says, the animals grow emaciated, and ultimately perish through general weakness. The post-mortem examination reveals invariably fatty degeneration, especially of the liver and kidneys. Iodol is almost totally decom-

posed in the organism, and is eliminated as an iodine alkali through the urine. Pure iodine appears never in the urine after the use of iodol.

PULSATILLA.

According to M. BRONEVSKI, in *L'Union Méd.*, anemonin, a substance prepared from the *anemoni pulsatilla*, first irritates, then paralyzes the respiratory centre. It diminishes cardiac activity and voluntary movement by its action on the spinal nerve-centres. It causes death in dogs and rabbits by paralyzing the heart, in doses of 3 grms. of the extract administered subcutaneously. This quantity corresponds to ten of infusion or decoction and to one to two of the tincture. 0.1 grm. of anemonin proved fatal to a rabbit in an hour; dogs succumbed to a subcutaneous injection of 2 grms. in from twenty-four to thirty-six hours, with increasing dyspnoea, torpor, paralysis of all the limbs, diarrhoea, and cessation of cardiac movement. Autopsy showed hyperæmia of all the parenchymatous organs. Therapeutically, anemonin is useful in bronchitis, convulsive cough, and asthma. The daily dose is from 0.05 to 0.1 grm. taken twice in powder. A larger dose causes headache and heaviness in the limbs.—*Med. Press*, August 11, 1886.

THE CAUSE OF THE TOXIC ACTION OF CHLORATES.

From the *Archiv für Experimentelle Pathologie and Pharmacologie*, vol. xxi. p. 169, we abstract some conclusions of Dr. STOCKVIS on the poisonous action of chlorates, which, for the sake of their novelty, invite our interest.

The doctrine held heretofore, that the chlorates exert an oxidizing, and consequently decomposing, influence upon the living blood, is no longer tenable. The toxic action of large doses of chlorates refers solely to their action as salts.

If the chlorates were actually reduced in the living organism, the urine would necessarily present a deficit in the quantity of eliminated chlorates. True, a slight deficit in the chlorates has always been determined in the urine, but it must be remembered that a small portion of the chlorates passes unchanged into the saliva, and, besides, the elimination of the chlorates in the urine is not yet ended in twenty-four hours, the urine voided later always containing some more

chlorate. It has also been determined that the urine, on standing for some time, reduces a chlorate into a chloride.

Chloride of sodium materially increases on the day of its ingestion the quantity of the chlorides in the urine, while the chlorates are present in their maximum quantity.

After the withdrawal of chlorates the elimination of chlorides decreases simultaneously, although the urine still contains some chlorate. The increase in the elimination of chlorides is wholly independent from the quantity of ingested chlorates; it is, for example, just as large after 15 grains as after 30 grains.

This increased elimination of chloride of sodium refers by no means to a reduction of chlorates, as is demonstrated by the following example: Of two rabbits who were starved until their urine contained no more chlorine, one received 60 grains of chlorate of sodium and the other 60 grains of nitrate of sodium. These two salts caused a relatively great and almost equal elimination of chloride of sodium, which disappeared on the following day.

Another evidence against the reduction is the fact that even very small quantities of chlorates pass into the urine unchanged. It is only outside of the body in experiments with blood, in autopsies, etc., that this reduction of chlorates actually takes place. Of the chemical constituents of the animal organism none is able to reduce chlorates outside of the body at the temperature of the blood; the urine itself, though, is, as intimated above, well able to reduce chlorates.

Having thus shown that the reduction of chlorates is not the cause of the toxic action of these salts, the author passes to the discussion of what constitutes this cause. He found experimentally that chlorate of sodium exhibited by intravenous injection is not more and not less poisonous than the ordinary table salt, and that hence the latter could, with equal propriety as the former, be called a poison. The lethal dose was for both salts 8 to 10 grammes per kilogramme of body weight. The phenomena, after the injection of salt, were at first irritation, then depression of the central nervous system, albuminuria, and œdema of the lungs. The chloride of potassium appeared strangely to be even more poisonous than the chlorate of potassium.

The "toxic gastritis" usually found after poisoning with chlorate of potassium is the result of the introduction of a large quantity of an irritating salt into a mostly empty stomach, and the high-graded dyspnoea, the deep cya-

nosis, the cardiac weakness, and the convulsions are partly reflex phenomena emanating from the toxic gastritis, and partly refer to the action of potassium, or that of a concentrated solution of salt on the blood.

The author gives, in conclusion of his paper, the following practical suggestions: The chlorates ought not to be given in too large quantities at once, and not in too concentrated a solution (one and one-half to two per cent.), nor on an empty stomach. The average dose for an adult may reach 2 drachms *pro die*. If the urinary secretion is scanty, for one reason or another, the chloride of sodium is preferable to the chloride of potassium, as the slower elimination of the potassium salts may in these cases easily lead to an intoxication.

In connection with this paper, we find the mentioning of a case of poisoning with chlorate of potassium with a lethal termination. A man took by mistake 4 drachms of the drug in two hours, and died in twelve hours.

THE PHYSIOLOGICAL ACTION OF MENTHOL.

DR. GOLDSCHIEDER, at a meeting on April 9, of the Physiological Society of Berlin, discussed the action of menthol on the sensory nerves. It was well known that it produced on the skin a sensation of cold, which was commonly ascribed to evaporation. On the other hand, the same sensation, when produced in the mouth by solutions containing menthol or peppermint, was explained by a supposed astringent effect. Dr. Goldscheider had come to the conclusion that neither of these explanations was correct. He made his experiments with a solution of menthol in lanolin, which he rubbed into circumscribed regions of the skin. After the rubbing, the thermometer showed, in all such places, an increase of temperature to the extent of 2° C., notwithstanding the marked sense of cold produced. The hypothesis of evaporation was excluded by the fact that the feeling of cold was no less marked when the part rubbed was covered with a watch-glass, and could, therefore, be produced only by direct stimulation of the nerves of sensation of cold. Again, if of corresponding places on the forehead, where these nerves are most abundant, one were rubbed with the menthol ointment, and the other not, bodies which previously had caused no particular sensation would be felt as cold on the former spot, but not on the latter. Dr. Goldscheider, observing that

while some regions, as the forehead, were especially sensitive to cold, others, as the elbow and the volar side of the wrist, were so to heat, found that the inunction of these with menthol produced a sensation of warmth, though less striking than that of cold in the former regions; and he called attention to the recent communication of Professor Herzen on the precisely analogous results of pressure on the nerve-trunks in these regions respectively. He therefore concluded that the sensations, in some places of cold, and in other places of heat, produced by menthol, were purely subjective and consequent on the direct stimulation of the special nerves of temperature, those usually cognizant of cold being far more sensitive to its influence than were those adapted to receive impressions of higher temperatures.—*Brit. Med. Journ.*, August 21, 1886.

IODOL.

Among the many new antiseptic remedies that recently have been introduced into surgical practice, iodol is among the most likely to retain its place. Iodol, or the powdered iodide of pyrrol (C_4I_4NH), is a light fawn-colored micro-crystalline powder, odorless, and almost tasteless. It contains 88.9 per cent. of iodine. It is soluble in warm oil, 1 to 7; alcohol, 1 to 3; and ether, 1 to 2; and also in chloroform. It has been used powdered as an application to phagedenic chancres and for syphilitic sore throat, and Dr. Foy (*Med. Press*, August 4, 1886) has also made it into bougies with cocoanut oil for cases of gonorrhoea and gleet, and as an ointment with lard (1 to 3) for indolent ulcers. In fact, it may be used with success in all cases where iodoform is indicated. It is non-poisonous, and is eliminated from the system as iodine. Dr. Wolf has found from his experiments made on rabbits that a ten per cent. solution in oil produced no irritation. Drs. Mazzoni and Rocci have employed it over two hundred times.

In venereal affections (chancres, adenitis, and periadenitis) it was used with the best results. The venereal sore having been washed with water, and carefully dried, was sprinkled over with iodol powder, and covered with silk protective; if the chancre was large and very purulent, Brun's wool was also employed; this dressing was repeated every twenty-four hours. After the dressing had been renewed from four to six times, the base of the chancre commenced to granulate, and the edges showed a tendency to cicatrize; no

fresh ulcerations, nor any adenitis in the inguinal region, ever appeared, and even commencing inflammation of the lymphatic glands (in two cases) subsided without any special treatment.

In patients who came with wounds which had large openings, with thinned, undermined, and blue edges, the free incisions which are recommended in such cases should be avoided, and the surface of the sore simply sprinkled with iodol powder. In twenty-four hours a change was noticeable in the character and quantity of the secretion. The ulcer was cleansed with Brun's wool, and, after the dressing had been renewed three or four times, it commenced to granulate, and showed a tendency to rapid cicatrization.

In ulcers where there is very marked necrobiosis, the good effect of iodol is very remarkable,—the foul smell disappears, the secretion diminishes, and the ulcer changes in a short time to a healthy granulating wound. In atonic ulcers also the result was likewise favorable: even after two applications a distinct improvement was to be observed. On the other hand, iodol was quite ineffectual in sloughing ulcers where there were marked sloughs; in these cases its use had to be discontinued, since not only did no improvement ensue, but the disease extended. The cause of this seemed to be that the iodol in such cases is washed away by the fluids which are secreted in such quantity, and that in employing alcoholic solutions the iodol is precipitated and then carried away.

As regards the principle of the action of iodol, it is probable that, as in the case of iodoform, very small amounts of iodine are constantly being liberated at the place where it is applied, and that on this the local therapeutic effect of the remedy depends. The nascent condition of the iodine seems to render possible the further combinations to form iodide of potassium and iodide albuminate, under which condition it is absorbed. The liberation of the iodide from iodol, especially when this is in the form of iodol gauze, may be more certain than in the case of iodoform. Iodol gauze dressings show, after remaining on for a single day, a distinct separation of iodine in the gauze, and also a marked brown coloration in the neighborhood of the wound; very probably this liberation of iodine is occasioned by the warmth of the body, though possibly also by a fermentation occasioned by the secretions from the wound. That the former plays a part may be seen from the fact that iodine is liberated when iodol gauze is

heated in a test-tube, and also a development of iodine may be observed in the gauze when it is kept at a temperature of 39° C. for twenty-four hours on a water-bath.

Although iodol is far from being perfection as an antiseptic,—for on account of its very slight solubility in water, 1 in 500, and also on account of its present high price, many would prefer another drug,—nevertheless we cannot refuse to admit the great advantages of its mildness of action, its power of deodorizing secretions, the absence of the formation of crusts, and its being almost completely free from odor. The greatest advantage would also accrue if, in addition, its employment should be unattended with any poisonous results.

Like most medicinal agents, iodol has been recommended as a local application to cancer, especially uterine, and as a powder it has been insufflated on the diseased surface, and its glycerin alcohol has been painted over the carcinoma.

ICHTHYOL IN CHRONIC URTICARIA.

We abstract from the *Wiener Medicinische Blätter* of August 5, 1886, the following therapeutic note regarding ichthyol :

According to UNNA, we possess in the salicylate of sodium and in atropine two remedies against chronic urticaria, which are ordinarily wholly reliable. Still, there are cases in which not only these drugs but the entire host of nervines fail, and ichthyol alone brings relief and cure. The following two cases may serve to illustrate this fact :

1. Miss S., æt. 22, chlorotic ; presented for treatment March, 1885, for an extended urticaria, existing four weeks. Salicylate of sodium was given in the largest doses for several days without the slightest benefit. Atropine internally (0.0005 *ter die*), painting with equal parts of spir. saponat. and tinctur. bellad., decoction of valerian, and iron pills brought on an improvement, which, however, soon disappeared again. Ichthyol (pure) taken in 5-drop doses three times daily, and applied also externally, established a perfect and lasting cure.

2. Vigorous man ; treated by other physicians without success for an urticaria of several weeks' standing. Unna prescribed ichthyol, to be employed internally and externally, and again effected a perfect cure.

In neither case did any relapse appear.

THE ACTION OF URETHAN.

DR. EMILE KRÆPELIN contributes an article to the *Neurologisches Centralblatt* (March 1) on the action of urethan. The reports on this hypnotic have up to the present been uniformly favorable. Kræpelin's experience has been of a like character. He has given the drug in about two hundred instances. Most of his cases were cases of insanity, but thirty-four instances of various other diseases were included. The dose ranged, as a rule, from 1 to 3 grammes ; occasionally a dose of from 4 to 5 grammes was given. No unpleasant effect on the heart or nervous system, either during the action of the drug or afterwards, was ever noticed. In one case of alcoholic gastric catarrh, vomiting was produced by the larger dose. The appetite, however, was never in the smallest degree impaired, even by the continuous use of the drug for several weeks. Urethan acts as a genuine hypnotic. Ten or fifteen minutes after taking it a quiet sleep comes on, which lasts for several hours, and from which the patient wakes up without any unpleasant feeling about the head. Should the sleep be interrupted by any external cause, the patient generally falls off to sleep again as soon as the disturbance is removed. The certainty of the drug's action depends upon the cause of the sleeplessness, and on the dose. It is not a hypnotic of great energy, and in cases of great excitement it is of little value. In such cases it is far inferior to paraldehyde. In delirium tremens, especially, it failed. Perhaps, however, if larger doses were given in these cases, the result might have been more satisfactory. For the relief of pain the author does not consider it of any use whatever. In cases of phthisis the combination of a small quantity of morphine was found useful. When given in doses of 1 gramme, it acted sufficiently in fifty-four per cent. When the dose was 3 grammes, the result was favorable in seventy per cent. The form of mental ailment, in most cases, was general paralysis or melancholia. In the excited stages of general paralysis, small doses were frequently altogether without effect. The larger doses in such cases gave a satisfactory result in sixty per cent. of the cases. In the higher degrees of excitement, in mania, for example, as well as in delirium tremens, the author found himself obliged to have recourse to paraldehyde. In melancholia the drug gave better results ; it secured quiet sleep in seventy-seven per cent. The patients were all women, and many of them were very anæmic. Among the most

favorable indications for urethan the author places exhausting diseases, feverishness, and lowered nutrition. One great advantage which this drug has over paraldehyde is that it is not so unpleasant to the smell or taste, and it can, if necessary, be taken in simple solution without any flavoring or disguising agent.—*Brit. Med. Journ.*, September 4, 1886.

RHUS RADICANS.

SEÑOR FERNANDO ALTARNIRANDO, writing in the Mexican journal *El Observador Medico* on a plant called locally the Guau or the Mala Mujer, the scientific name of which is *Rhus radicans*, states that its active principle is of a peculiarly volatile nature, and relates the case of a man who, after collecting and cutting the plant up, complained of chills and a feeling of extreme fatigue, and subsequently developed a rash, at first erythematous, and afterwards pustular, affecting chiefly the groins, axillæ, and other parts where the sudorific glands are most numerous. The action of the exhalation from the plant could not well have been direct, as the parts chiefly affected were covered with clothes, and so the writer suggests that the active principle must have entered by the respiratory passages, being then carried by the blood to the skin, where its action became manifest. He advises that preparations of the drug should be made from the freshly-cut plant and its juice, and that all the collecting should be done before sunrise. The tincture might be made use of, but the extract must necessarily be inactive, as, indeed, it has proved itself, having been experimented on by Dr. Dominguez. In case of accidental poisoning, such as in the patient mentioned, the indications would be to produce diaphoresis, and to maintain the skin in a state of moisture. In order to prevent toxic effects, those who gather or manipulate the plant should be careful not to breathe the air which has passed over it, but should keep to windward of it.—*Lancet*, July 27, 1886.

THE VALUE OF RESORCIN, ICHTHYOL, AND LANOLIN IN CUTANEOUS DISEASES.

At the recent meeting of the American Dermatological Association, DR. H. W. STELWAGON, of Philadelphia (*Boston Med. and Surgical Journal*, September 16, 1886), read a paper with the above title, of which the following represents his most important conclusions:

Resorcin in eczema is rarely of benefit, but possesses some power over the itching. For this purpose a six per cent. ointment is useful. In greater strength it is irritating. In tinea sycosis it has proven of some value in ten to twenty per cent. strength. In tinea tonsurans, it is inferior to the remedies usually employed. In one case of leg ulcer healing took place under its use. In a second case, no effect was produced. In seborrhœa and alopecia dependent upon this disease, a lotion, consisting of a drachm of resorcin, one or two drachms of castor oil, five minims of Peruvian balsam, and four ounces of alcohol, was of value. In tinea versicolor it was found less useful than a solution of hypophosphite of sodium. In psoriasis and in one case of lupus erythematosus, the result was negative. In one case of superficial epithelioma, a fifty per cent. ointment produced a good result. In a second case, a fair result was obtained, and in a third the result was negative. In a case of favus, a twenty-five per cent. ointment used two months produced no decided effect.

Ichthyol.—In a small proportion of cases of rosacea and acne vulgaris a ten to twenty per cent. preparation was found beneficial. In eczema it was valueless and usually irritating. In furunculus it acted with good results in three cases, when applied as a twenty per cent. plaster. In the fourth case it had no effect. It was of service in psoriasis, and also in a case of lupus erythematosus. In favus it was used without effect.

Lanolin.—In some cases as an ointment base this is superior to the ordinary fats in use. Where a simple protective action is desired, it is inferior to vaseline, cold cream, or lard. In chronic cases, where there is infiltration, and a degree of penetration is the object, lanolin is especially valuable. The writer stated that, according to Liebreich, a *lanolinum purissimum* was now manufactured, in which the cholesterin ethers were absent. The main disadvantage of lanolin, as now manufactured from sheep's wool, is its strong sheepy odor. In a few acute and subacute cases of eczema, lanolin, for some reason, proved irritating. As a rule, however, it is bland and unirritating.

COCAINE IN THE TREATMENT OF GONORRHOËAL OPHTHALMIA.

MR. A. LEAHY reports in the *Indian Medical Gazette*, July, 1886) two cases of gonorrhœal ophthalmia, in both of which the greatest benefit was derived from the local

application of cocaine. As is well known, in gonorrhœal ophthalmia it is of primary importance to lessen the inflammation rapidly, to relieve the intense congestion of the conjunctival vessels and reduce chemosis, and by so doing prevent ulceration and sloughing of the cornea. Last, but not least, is the relief of the ocular and circumorbital pain, which, by its persistence, greatly depresses the patient, and prevents sleep. Mr. Leahy employed a mixture composed of $\frac{1}{2}$ grain of sulphate of atropine, and 4 grains of sulphate of cocaine incorporated with 100 grains of vaseline. This mixture was introduced beneath the upper eyelids, and after three days' treatment the chemosis rapidly became less, the discharge diminished in quantity, the pain completely disappeared, and the cornea, which had been hidden by the chemosis, became visible.

LIGATION OF THE VERTEBRAL ARTERIES FOR THE RELIEF OR CURE OF EPILEPSY.

The question of the value of surgical interference in the treatment of epilepsy is one that has never been fully settled. It is true that where depressed bone is found as the cause of the epilepsy, no one at the present time questions the necessity of relieving the pressure, but the operation of ligating one or more of the large vessels furnishing blood to the brain for the relief or cure of epilepsy is a procedure concerning which opinions are at present at wide variance. But few cases have been reported where this operation has been performed for epilepsy, so that as yet scarcely any sufficient and reliable conclusions can be drawn. From a study of these cases, however, DR. J. L. GRAY thinks that the following conclusions are warranted (*Neurol. Review*, July, 1886):

1. Ligation of the vertebral arteries should take its place as a recognized procedure in the treatment of certain cases of epilepsy.

2. The operation should be confined to those cases in which the exciting causes of the attacks come from some region outside the brain.

3. The arteries should be tied as high up as practicable, and the ligature should include all the fibres of the sympathetic accompanying the vessel.

4. Where the side of the brain which is first invaded by the disease can be determined, the artery of that side should be ligated.

5. Where the invasion of the disease is apparently bilateral, both vertebrals should be ligated.

6. This operation should not be done as a substitute, but as an aid to other forms of treatment for the relief or cure of epilepsy.

COLD APPLICATIONS TO THE PRÆCORDIA IN FEVER.

In the *Practitioner* (August, 1886) DR. F. T. GRIGOROVICH publishes the results of this mode of treatment of fever employed in the Rostoff Military Hospital. His observations were made on uncomplicated cases of typhoid fever. He finds that the respiration, at first somewhat quickened and rendered irregular by the reflex actions, subsequently becomes slower. At the end of the application of the ice and the next morning it is deeper and more regular, but somewhat slower than before the ice was applied.

The general conclusions regarding the effect of applying cold to the region of the heart are as follows:

1. The cold undoubtedly reaches the heart itself, and thus produces an effect on its action.

2. This effect is particularly noticeable when the cardiac beats are increased in frequency in consequence of a high temperature quickly attained, and where a certain degree of sensitiveness to a high temperature exists.

3. The effect of cold is not marked at the end of a prolonged attack of fever, pathological changes having by that time probably become established in the cardiac muscle.

4. The local application of cold is only capable of protecting the heart-muscle from the effects of a high temperature when it is applied assiduously from the commencement of the disease.

5. Under its influence the action of the heart improves, the number of beats diminishes, while their force and amplitude increase.

6. Cold applied to the region of the heart diminishes the gravity of the *typhoid* condition and favorably influences the respiration.

7. With regard to the effect of cold applied to the region of the heart on the course of the general temperature, the author cannot at present express a decided opinion, as he did not investigate the question; but in the results which he obtained indications may be found of the possibility of its causing some diminution of the temperature.

A NEW METHOD FOR THE DETECTION OF HYALINE CASTS.

DR. S. E. ARMSTRONG, of Passaic, N. J., sends to the *New York Medical Record*, September 4, 1886, a description of a method of manipulation devised by him to facilitate the detection of hyaline casts in the urine. He calls attention to the value of these casts from a diagnostic point of view, since the presence of albumen alone is no certain evidence of the existence of nephritis, and its absence does not necessarily imply a healthy state of the kidneys. He writes: "The hyaline cast may be said to form the stroma of all other varieties,—the oily, epithelial, granular, etc. It is always found in some of the different stages of any of the forms of Bright's disease, particularly in the first stage, when a recognition of the trouble is most to be desired. The propriety of making a positive diagnosis on the strength of this one sign may justly be questioned, but there are usually other symptoms, objective or subjective, to aid us. Of course the use of the microscope in the search for hyaline casts is an absolute necessity. Two methods are usually taught, viz., staining and tilting the mirror. The first I regard as impracticable, because it involves too much trouble; the second because it is unreliable. I have never been able to make the desired success of either, though I must confess that I have not frequently tried the former. There is another method which comes to me in the nature of a discovery. Others may have known of it for years. I have not been able to find a description of it in the books, although it may be there. Briefly, it consists in preparing the specimen in the usual way, between a plain slide and cover-glass. Then placing the slide in position and adjusting the focus, the observer, with his eye at the instrument, presses the cover-glass down with a thumb on either side of the objective, and then, the slide being held firmly by the clips, pushes the cover-glass a little bit forward and back. By this means he has the advantage of *looking for an object in motion*; also, a cast, if present, is made to pass, rotating on its long axis, through different planes of the fluid, *hence through different possible foci*. By this means alone it is almost sure to be discovered. But there is still another advantage in this method, viz., as the cast revolves through the liquid it gathers on, perhaps, amorphous urates, vibriones, or whatever minute object it comes in contact with, and is thus brought out into bold relief. Of course we must by previous

examination exclude granular casts, otherwise, *after* manipulation, we may be puzzled to tell which variety we have discovered; we must also be sure we have not rolled out a white blood- or pus-corpuscle, so that it misleads us into the belief that we have found a short one of either one or the other variety. Prolonged manipulation is neither necessary nor advisable."

SUBLIMATE INJECTIONS IN GONORRHOEAL CYSTITIS.

The history of an obstinate case of gleet and cystitis is given in *El Dictamen* by SEÑOR GARCIA ANDRADAS, which, after being treated unsuccessfully by means of injections of nitrate of silver, yielded very quickly to injections of corrosive sublimate. The patient, who was a river fisherman, contracted gonorrhoea, which was treated for a month with balsams and astringent injections. The discharge then became serous, and exquisitely painful vesical tenesmus supervened, the calls to urinate being so frequent as to give the man no rest. An attempt to pass an instrument occasioned the greatest agony when it came in contact with the prostatic portion of the urethra. The diagnosis made was that of acute prostatitis consequent on gonorrhoea, and so the local application of a sublimate solution appeared to be the most rational treatment, as it had in the author's hands proved very beneficial in cases of sub-acute cystitis due to the same cause; but it was thought well to try first Guyon's treatment. With great difficulty, owing to the extreme sensitiveness of the urethra, an elastic catheter was passed to the prostatic portion, and ten grammes (160 gtt.) of a one per cent. solution of nitrate of silver injected. A few minutes afterwards urine was passed with great pain, so a warm bath and an opiate were ordered, which gave only temporary relief, the opium having to be repeated at night. The next day the patient's condition was the same as it had been before the injection. Three or four days afterwards a similar injection was given, with no better result. Four days later, as there was no improvement, the use of sublimate injections was commenced. The catheter was passed as far as the prostate, and forty-five grammes of a two per mille solution of sublimate in warm water were injected. This the patient was compelled to retain for three minutes; the subsequent micturition was very painful, but at night he was able to rest, and retained his urine for three hours. The next day the

urine was less turbid, and it was voided less frequently. His condition continued to improve for three days, when a second sublimate injection was given of double the quantity of solution. This occasioned some pain, but it quickly passed off, and the patient was able to rest. In four days' time he requested to be discharged, as his urine was clear, and he had no pain on micturition. Thus, the author remarks, two injections sufficed to cure completely an affection usually most obnoxious to treatment of an ordinary kind. The superiority of sublimate injections has shown itself in several cases of a somewhat analogous character in which he has employed it. These he proposes to publish and discuss on some future occasion.—*Lancet*, August 21, 1886.

ACORN COCOA IN THE TREATMENT OF DIARRHŒA AND VOMITING IN CHILDREN.

Acorn cocoa is a preparation of ordinary cocoa powdered and freed from fat, to which are added the soluble parts of roasted acorns without cellulose, and a little sugar and roasted flour. Liebreich suggested this combination, and that it should be tried in the treatment of diarrhœa and vomiting of children, and it was found that of one hundred and two cases of diarrhœa with vomiting six only died, and the remainder recovered in from one to eight days. This combination is now manufactured as a substitute for tea, coffee, or cocoa, and is refreshing, tasty, and nutritive even for adults. DR. F. W. ELSNER (*Australasian Med. Gazette*, June, 1886) has also had a considerable experience with this remedy in this class of cases, and has obtained marked success by its use. His mode of administration was to mix a teaspoonful of it with cold water in a small cup, and then to boil it, constantly stirring, and this quantity is administered thrice daily by means of a spoon or feeding-cup. All other food and medicine is prohibited, and the quantity may be gradually reduced. Dr. Elsner has notes of twenty cases of continuous and exhausting diarrhœa with persistent vomiting, which had continued for three weeks in two cases and for shorter periods in the others. In half the cases various remedies had been employed before the acorn cocoa was administered; in the others, however, it was the first drug given, and its effect was rapid and complete in each instance, and it never took more than two days to bring about improvement, while twelve days

was the outside at which a complete cure was effected.

PIPERINE IN INTERMITTENT FEVER.

DR. C. S. TAYLOR reports in the *British Medical Journal*, September 4, 1886, two cases of intermittent fever which were treated by the administration of 3 grains of piperine every hour until 18 grains had been taken, as soon as perspiration commenced to follow the malarial paroxysm. On the following day, when the intermission was complete, the same quantity was directed to be taken every three hours. According to Dr. Taylor, this treatment in every case succeeded in checking the paroxysm. As soon as this is accomplished, he advises the use of the following pill, whose employment has always seemed to be very beneficial:

R Blue mass, gr. 1;
Piperine, gr. 2;
Sulphate of quinine, gr. 3;
Syrup, q.s.

Reviews.

STUDIES IN PATHOLOGICAL ANATOMY. By Francis Delafield, M.D. Vol. II., Part 2.
New York: William Wood & Co., 1886.

The above issue of Dr. Delafield's *Studies* contains descriptions and plates of chronic pulmonary phthisis and lobar pneumonia.

In regard to the nature of chronic phthisis, Dr. Delafield gives his opinion in very positive and unmistakable terms. He writes, "The one essential feature of chronic phthisis is the presence of tubercular inflammation; without this there is no phthisis. Such a tubercular inflammation is not only an essential but also a primary part of chronic phthisis; it exists from the very commencement of the disease. Phthisis is not an ordinary form of chronic inflammation of the lung, to which tubercles may or may not be added; it is primarily a tubercular affection." While tubercular inflammation is considered the essential and primary lesion of chronic phthisis by Dr. Delafield, he, however, admits that it may be very slight, or so changed by age, or other forms of inflammation may be so developed, as to obscure the tubercular character of the lesion. No doubt the confusion which exists in regard to the nature of this disease is in a great measure owing to the many complications that may arise during the progress of the disease. Notwithstanding some doubt

may exist in reference to the exact nature of the affection, it is gratifying to be assured by Dr. Delafield that "the lesions, the symptoms, and the treatment of chronic phthisis often depends much more upon the associated inflammations than upon the phthisis." The tubercle-bacilli are mentioned as being "regularly found associated with the lesions of chronic phthisis." The rôle played by these organisms, whether they are the cause or simply a result of the tubercular inflammation, is not here discussed by Dr. Delafield.

The different lesions which may be associated with chronic phthisis are represented by twenty-two drawings. Diffused hepatization of the lung is pictured in its various stages by nine drawings. This lesion is said to consist in the inflammatory products which fill the air-spaces, or by the growth of tissue in the walls of the air-spaces, or by a combination of both these conditions.

The morbid changes which are met with in the larynx, trachea, and bronchi in chronic phthisis, are illustrated by eleven drawings. Three drawings are given of the miliary tubercle, which is believed by Dr. Delafield to be always present in chronic phthisis, and also that it presents the same characters as the miliary tubercle which is observed in acute phthisis and in chronic miliary tuberculosis. Four drawings representing a rare form of lobar pneumonia are given. This special lesion is said to be "characterized by the production of new connective tissue within the cavities of the air-spaces a few days after the invasion of the inflammatory process." That organized tissue may be found in cases of lobar pneumonia which have been chronic in their course has been pointed out by a number of observers, but the cases given by Dr. Delafield are acute in their nature, and the pathological changes found after death differ from those met with in ordinary lobar pneumonia in that the exudation into the air-spaces takes on immediate organization, instead of following the usual course of later becoming connective tissue or being absorbed.

The drawings which illustrate Dr. Delafield's work are, as in the previous volume, made with high magnifying power, and therefore appear truly gigantic. Whether there is any advantage gained by the employment of such high power in studying ordinary pathological lesions is an undecided question with us. No doubt there is much minute detail still to be studied out in the histological elements of most pathological changes, but an examination of the drawings of Dr. Delafield

does not teach us any new arrangement of structure, since a comparison of his pictures with those of other illustrators, who have not used such high power, shows an exact resemblance between them. The author, however, has drawn faithful and most beautiful illustrations. Such work cannot but aid in the study of pathological changes, and we hope the "Studies in Pathological Anatomy" will continue to appear.

J. H. C. S.

Correspondence.

LONDON.

(From our Special Correspondent.)

The event that has been exercising the professional mind in England during the last few weeks is of course the annual meeting of the British Medical Association at Brighton. As one of your most worthy representatives happily and forcibly puts it, the specialization of the medicine of to-day demands co-operation: it is only by co-operation and association that the centrifugal elements of medical science, as they are now pursued, can be made to take a centripetal course at periodical intervals, and thus true inductive advance secured. Some of us may be of opinion that this very sound principle is carried too far, or even sacrificed, when association is made to take the shape of "collective investigation," for individuality is then sunk, and the observer becomes the slave of a committee, who demand the formulation of experience and opinion under a few cut-and-dried heads of their own choosing. In this country medical science, like our medical institutions, has been mainly supported by "voluntary contributions," and collective investigation does not appear to be in a very thriving condition at the present time. But it is quite a different matter that men should meet periodically and submit to mutual discussion the problems that have been holding their attention during the interval. It is good, too, that some of our aspiring juniors should have an occasional opportunity of raising their voices, premature though some of the conclusions may be which they air upon the platform. Nor must we forget the overworked practitioner, who welcomes his annual "outing," this relief from harassing work, this occasion for meeting old friends and of enjoying some social dissipation of a very innocent kind.

Brighton was the meeting-place this year, as I have said. Your readers, remote though

most of them be from the Sussex coast, have all heard of the queen of English watering-places. Few towns present greater attractions of a kind, especially to country associates, who would enjoy the keenest air in England, the brilliant sea, the gay crowds on pier and parade, and the many successful efforts to afford them pleasure in the way of dinners and balls, which a fashionable place like Brighton affords. I trust our foreign friends were equally satisfied. For ourselves, we, who live in the metropolis, do not as a rule take kindly to Brighton: it is too London-like to afford us the kind of change which our brains require. I need hardly add that the hospitality of our Brighton *confrères* was hearty and universal, and that all of us welcomed our visitors from America and the Continent. Among the members of the profession from your side of the Atlantic were Dr. Nathan S. Davis, of Chicago; Dr. Billings, of Washington; Dr. Grant, of Ottawa; Mr. Kingston, of Montreal; Dr. Shoemaker, of Philadelphia; Dr. Blake, lately of California; Dr. W. Brodie, of Detroit; Dr. Covernton, of Toronto; Dr. Pancoast, of Philadelphia, and many more. France sent us two worthy representatives in the persons of Brown-Séquard and Charcot; and German pharmacology had a splendid exponent in Oscar Liebreich.

I will not dwell upon the great "set" addresses, nor on the remarks with which the presidents of the various sections opened the work in their several departments. I must, however, refer to Dr. Billings's most able and original oration in "Medicine," which was so eagerly anticipated that it certainly of itself attracted some of the members from a distance. Dr. Billings's address was constructed with a literary skill, and given with a character and force which delighted his audience. It did more than this, however. It opened our eyes on this side to the vastness of the movement which is going forward with you in the States; to the rare and unique opportunities which you possess of studying certain great disease problems with respect to racial and other factors; and to the glorious future that your profession has before them, when medical education and medical legislation shall have become more advanced.

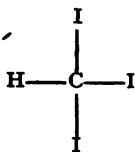
Dr. Broadbent's opening address in the Section of Medicine on the "Remote Effects of Remedies," was worthy of a man who is fast rising into the very first rank of London consultants. It was essentially the outcome of ripening experience,—an experience gained

by laborious observation and a far-seeing but carefully-tempered philosophical mind. Instead of joining in the cry against treatment, which is only too fashionable with us at present, Dr. Broadbent devoted his most recent deliverance to the abuse of useful remedies,—to the evil effects which frequently flow from the ill-considered application of treatment, whether medicinal or dietetic, to purchase present relief regardless of future consequences. The science of therapeutics can only profit by such a timely outspoken warning; for therapeutics suffers as much from the contempt brought upon useful methods by their indiscriminate use as from the studied neglect which it receives at the hands of its direct opponents. What could be nearer the truth than these remarks of Dr. Broadbent's upon a vaunted class of remedies for asthma, which we owe to the United States, and of which "Nimrod's cure" is the type: "The bronchial spasm may be met by a remedy which satisfies the demand for a local stimulant or sedative; but the solanaceous drugs, of which the powders are largely composed, contain powerful alkaloids, which obtain direct access to the blood through the pulmonary capillaries, and produce their effects on the nervous and vascular systems; and when you see the stupefied mental condition and the congested face and eyes, and note the large, weak, sluggish pulse, showing paralysis of the arterial walls, it is clear that such effects cannot be indefinitely repeated with impunity. It is where there has been a catarrhal element in the asthma that the results have seemed to me most disastrous. The right ventricle loses its tone like the muscular coats of the arteries, and instead of becoming hypertrophied, yields to the resistance in the pulmonary circulation and is dilated, finally giving rise to systemic venous stasis and dropsy." Again, it would be well for some of our West End physicians to read these words on dieting and carefully weigh them: "Numbers of people, especially women, who suffer from pain in the epigastrium after meals, attribute the discomfort to some particular article of diet. It is not uncommon for the medical man to take the same view of the case, and a scale of diet is laid down with great minuteness, adopting all the sufferer's restrictions, and perhaps adding more. This may be done even when neuralgia is crying aloud for more and better blood to be sent to the nerve-centres. There is still discomfort and a sense of repletion after food, and the patient improves upon his instructions until

the starvation point is reached. The energetic wife and mother becomes a fretful invalid, and neuroses are developed unless acute illness supervene, during which liberal nourishment is insisted on. In all such cases it is not the food that disagrees with the stomach, but the stomach which disagrees with the food, and the proper treatment is not levelling down the nourishment to the digestive capacity of the stomach, but the bringing up of the functional energy of the stomach to the requirements of digestion by extra food of a stimulating character, by stimulants at meals, or by tonics."

Besides these subjects, Dr. Broadbent took up the evil remote effects of the habitual use of colchicum and other specifics in gout, the misapplication of the "Banting" process, and the heroic treatment of migraine, and dealt with them in words which are not likely to be lost.

But I must come to the Section of Therapeutics, in which the editors and readers of the *GAZETTE* will feel a special interest. The Section of Pharmacology and Therapeutics at the British Medical Association meetings is of but recent development, but it is already a thriving youngster. Along with the Section of Pathology it has relieved medicine somewhat of the crowd of papers annually presented for discussion. This year it met under the able and genial presidency of Dr. Lauder Brunton, the most prominent representative of therapeutical science south of the Tweed. Dr. Brunton's opening address was characteristic of the man. It was intended—and with complete success—not so much to adorn as to improve the occasion, to delight and charm less than to instruct his hearers. Which among us is not painfully conscious of the rapidity with which modern organic chemistry is marching away from us? We have struggled through one "notation" after another, and through more than one nomenclature; and all this only to find ourselves once more in the rear of chemical progress, which now appears to the uninitiated to be surely returning to cabalistic and alchemic symbols, when iodoform is represented by



and resorcin by an elaborate closed chain with lateral and terminal hooklets. Dr. Brun-

ton sympathizes with our difficulty in all this, and has given us an account of the connection between chemical constitution and physiological action couched in terms so plain and popular,—so full of easy illustration, and so suggestive,—that a child almost might master the elements of the subject. If his argument were not so continuous, I would have quoted freely from Dr. Brunton's admirable address; but, as it is, I will only cite a few sentences on certain benefits that have quite recently accrued from the study of this subject, leaving your readers to peruse the original text on other pages. It occurred to Dr. Brunton and Dr. Cash, in the course of a series of experiments, that if they could saturate the body of an animal with potassium they should be able to render it proof against the poisonous action of barium. Having met with some success, Dr. Cash pursued this line of investigation much farther, and obtained results which, in Dr. Brunton's opinion, are "among the most extraordinary and the most promising in pharmacology." Knowing, as he did, that corrosive sublimate was an exceedingly poisonous disinfectant, it occurred to Dr. Cash that it might be more harmful to disease-germs than to the bodies of higher animals, and that he might be able, by the introduction of the poison into the body of an animal, to render it unsusceptible to zymotic diseases. A similar idea had occurred to Koch, who injected corrosive sublimate into animals after previously inoculating them with anthrax; but his experiments failed, while Cash has proved successful by introducing the corrosive sublimate before inoculating with anthrax, and thus giving the drug the start of the disease. "These experiments," said Dr. Brunton, "acquire an additional interest from the fact that M. Pasteur, although uncertain regarding the exact mode in which his process of inoculation for hydrophobia has brought about such satisfactory results, is disposed to think that the agent which prevents the disease is a chemical substance and not a microbe."

The place of honor among the communications in the Therapeutical Section was very properly given to one by Liebreich, the discoverer of chloral, who read an important paper on lanolin, his new basis for ointments. Dr. Shoemaker, a recognized authority on the subject, took part in the debate. Two general discussions were well sustained,—the one on "Antipyretics," introduced by Dr. Carter, of Liverpool; the other, on "Analgesics," opened by Dr. Spender, of Bath. Among

the papers read were one by Dr. Shoemaker on "Hamamelis," which once more insisted on the value of the drug as a hæmostatic, spite of your own recent researches on its pharmacology; one by Dr. Blake, on the "Climate of California,"—a note of warning; the record of an investigation into the *modus operandi* of "Morphine in Diabetes," by Dr. Mitchell Bruce; and a preliminary communication by Dr. Semon and Mr. Horsley, on the "Action of Ether upon the Larynx."

August 21, 1886.

POTASSIUM PERMANGANATE IN AMENORRHOEA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the June number of the GAZETTE you ask for experiences as to uses of potassium permanganate in amenorrhœa. I have used it in two simple cases uncomplicated by anæmia, *without result*, giving two grains thrice daily, after meals, for six weeks, and using also stimulating pediluvia, and in one case local faradization of uterus for four weeks, three times weekly. In a third case I used it three weeks without any result in the same dose, and then resorting to other remedies for four weeks, the patient came all right.

My conclusion from this experience is that it is not so valuable a remedy in amenorrhœa as we have been led to expect.

Yours very respectfully,

J. N. TILDEN, M.D.

PEEKSKILL-ON-HUDSON.

THE ANÆSTHETIC REVELATION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Allow me to recall attention to the article in your issue of August 16 by Dr. Shoemaker, entitled "Recollections after Ether-Inhalation." The paper is memorable in the interest of the topic and the guarded and conscientious spirit of its treatment; for what should have more interest, even for practical minds, than the fact, there repeated, that in so simple and easy an experiment as ether-inhalation the primordial mystery of being may be appreciated? and what should be more hopeful for the advantage of whatever of science may be involved than the fact of the experience being related by manifest gentlemen, whose tone carries conviction of reliability?

The illumination or insight to which that article refers has been usual with me for

twenty-five years. I published an account of it in 1874 in a pamphlet of thirty-two pages, of which I distributed one thousand copies gratuitously, and have never allowed it to be sold, nor any money to be made out of it by any one. My work had some attention, and elicited many communications, among them a remarkable letter from Alfred Tennyson, giving normal experiences of "a kind of trance to which he had been subject quite up from boyhood." This letter is even now, within a month, republished in English papers; and the topic of your article is an ordinary one to a very extensive circle both here and abroad, mainly of scientists of the order of speculative philosophy. The topic was considerably treated in *Mind*, the London metaphysical magazine, by Dr. Wm. James, the eminent metaphysician of Harvard University, he there endeavoring to *express* the secret. In that circle I am usually regarded as having first signalized the anæsthetic revelation as somewhat reliable and uniform in the experience of intellectual men; indeed, I published my work avowedly only for fear that the secret—that is, its apprehensibility—should die with me. Not but that thousands had experienced the insight, but that up to that time no one had publicly claimed it and demanded its uniform expectation. It will seem a very small matter to me to find myself mistaking the originality of so accidental a discovery, yet the discovery was treated as mine by the reviewers of that year. It is of much more interest and importance to me to have what was a lone-some secret to me for fourteen years confirmed as a homologous insight of the race, and seeking expression of its mystery whenever it appears to such as have appreciation of the difference between knowledge and mystery in our present stage of advancement.

But the general reader will be apt to lose patience with these extraneous considerations, and to demand the secret itself. It is but rational in any man, hearing the claim of a revelation, to expect to be told what it is. But here the race is wholly at fault as yet; for the secret clings to the condition, and is precisely that which philosophy has sought as abstract truth through all the history of thought. We can give the style and region of it, what it is generally about, but we fail to express it so as to recall it normally, simply through lack of "divine philosophy." We have not understood it expressibly, for the same reasons that we have not understood expressi-

bly anything at all in the region of thought to which it belongs.

To this part of the subject, which is now the main part to the advanced experimenters, Dr. Shoemaker's article is only initiatory. He declares the experience, and locates it in thought,—that is, he says it is the mystery of existence, or, in his own good words, "the simplest expression or essential nature of human existence;" it was given him *as* a revelation; he "must remember all that occurred," etc. But the questions, What is it? and Why was the whole illumination swept inexorably away from him? will be asked in vain until the philosophy of Hegel is rectified. I think I follow Dr. Shoemaker very well in his account. Of what he means by *aural waves* I know very well, but I think I may speak for myself and many others a doubt that a repetition of the experience would prove his lines to be a competent illustration. The fact that was impressing him was probably this. Sanity—our ordinary tenor and participation of intelligence—is felt, in the revelation, to be only one accidental or arbitrary grade or degree of a kind of humming which the anæsthetic hastens; this pace quickens until we lose all distinction, and as we "come to," and the pace slackens, we perceive that this high state was as true sanity as we ever had, and we are astonished at finding, as we land on our terra firma, that sanity is only an accustomed grade, that might as well be either higher or lower. So, in a less degree, a man, exhilarated with intoxicating drink, feels that he is only at his best, and some have wondered why one might not be born with "three sheets in the wind." It is here that interest culminates in the experience; as a certain amount of liquor makes a "better man" of him in his own true consciousness, does the anæsthetic legitimately quicken the thought up to the appreciation of the divine but impersonal mystery? Is that really the difficulty of philosophy,—the grasp of the truth of being,—that we are not quite quick-witted enough, rather than organically barred out from it? and is the anæsthetic revelation philosophy's goal?

Long experience has taught me the way to this awful mystery in the normal condition. I can lie on my back in the still night, and go as near to it as my nerve will sustainingly permit. To go farther would demolish individuality; a side glimpse is enough for a mortal eye. And I know philosophically the reason of this dread. The truth of us and of all being is duplex. Philosophy had got so

far with Hegel as to grasp the ancient saying that being and not being are equal, and halves of that reality which as a whole is being proper; but this whole could not be in time, and all dialectic involves a time process. The philosophical necessity was a new ontology, eliminating the element of time, and in which all things always are. This ontology is my claim to the attention of the hour.

I have gone as far as you can well accompany me as caterers to a "scientific" as distinguished from a metaphysical constituency. I may well wish that you would go farther; for all science, all absolute and radical explanation, is metaphysical; and in publishing the article of Dr. Shoemaker you essay positions which, however they may be "diagnosed" by physicians, as such, can be explained by metaphysicians alone. Referring facts to "law," "force," "designing mind," "divine power," and like generalities is no longer competent as for ultimate understanding.

If any of your readers care to follow my exegesis of the inevitable, they may consult the leading article of the last number of the *Journal of Speculative Philosophy* (D. Appleton & Co., New York, and Trübner & Co., London).

Much impressed by the tone and contents of the THERAPEUTIC GAZETTE, I trust earnestly in its success, and remain

Yours, with high regard,

BENJ. PAUL BLOOD.

AMSTERDAM, N. Y., August 31, 1886.

THE TREATMENT OF RHUS-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—It is my fortune every season to see quite a goodly number of cases of rhus-poisoning, and I wish to emphasize a plan of treatment for this annoying trouble, already mentioned by Dr. Morrow in the *Journal of Cutaneous and Venereal Diseases*, and copied in the GAZETTE.

My treatment is simply a saturated solution of bicarbonate of sodium. I saturate strips of muslin in this solution, and apply them evenly over the surface, and then endeavor to keep the surface thoroughly moistened with the solution until the dermatitis subsides. I do not give any medicine internally. There is nothing new about this plan of treatment, but it has been entirely successful in my hands in every case.

FREDERICK W. PUTNAM, M.D.

BINGHAMTON, N. Y.

IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—I desire to call the attention of the medical profession to the specific action of the oil of sassafras in rhus-poisoning. I have used this remedy for many years in these cases, and have never known it to fail in any case. I generally have the oil rubbed well *all* over the parts affected twice daily. Many cases do not require the second application. I also let the patient have from 3 to 5 drops on a lump of sugar three times a day. I claim that this will cure "*all cases*," no matter at what stage used. I have used the oil with perfect success after bicarbonate of sodium, sulphate of zinc, sugar of lead, and other usual remedies have completely failed.

It will instantly relieve the pain from the sting of any insect,—bee, hornet, or spider. It should be given internally in bad cases. It will abort boils and carbuncles if given in from 5- to 10-drop doses three times a day. Try it and report.

A. J. ROE, M.D.

DECATUR, ILL.

IVY-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—If you are not already supplied with an abundance of prescriptions for ivy-poisoning, you may publish the following, which I have used for fifteen years without a single failure:

R Sodæ sulphis, \mathfrak{z} i;
Acid. carbol., \mathfrak{z} iss;
Glycerin., \mathfrak{z} ii;
Aqua, ad q.s. \mathfrak{z} viii. M.
Ft. sol.

Sig.—Apply on cloths, keeping them constantly wet with the solution.

No other treatment is required.

J. F. WHITE, M.D.

COUNCIL BLUFFS, IOWA.

QUACKERY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—I would like to add a few words towards agitating what I consider a most vital question to every member of the medical profession, introduced in the last number of the GAZETTE by J. Z. Scott, M.D., of Scandia, Kansas. I sincerely hope that his remarks will strike every reader of the GAZETTE as favorably as they have me, and that the question will be agitated until the profes-

sion at large are thoroughly aroused to the fact that our business is being filched from us, to a greater or less extent, by a lot of quacks and charlatans, who are flooding the country with their nefarious nostrums.

It is astonishing to me how the profession have sat still so long, and seen this business going on right under their eyes, and have never raised their voices against it. I think, as Dr. Scott does, it is time, and high time, that we do something in the way of protecting our business.

Just go into any drug-store and see the shelves loaded down with these quack and proprietary remedies, read the advertisements of many of these venders, giving the names of a score of disorders their medicines will cure, ending up with, "This wonderful remedy is now recommended and prescribed by the leading men of the medical profession all over the world." Is it any wonder that our profession has no dignity in it in this country?

It is *true* that in nine families out of ten the physician is only called as the last resort. The many thousands and thousands of dollars which go in to make the coffers of these men fat, who have never spent a half-dozen hours in the legitimate study of medicine, of a right belong to the men who have spent years of hard labor and many dollars to fit themselves for an honorable calling.

There is another gigantic evil that the minds of the profession ought to be directed to, and that is the squelching of itinerant quacks. It is perfectly marvellous the cheek some of these fellows exhibit.

The country is full of them. Listen. Dr. Schmoodinary (or some other outlandish name), of *fifty* years' experience, will be at the H— Hotel at such a time, and has never failed to cure (naming a score of chronic diseases) *every* case that he has ever treated. Now, it is perfectly amazing to see the number, and among them quite intelligent people, who will flock to the answer of such an advertisement.

For example, an old clairvoyant woman came to this town some eight or nine months ago, claiming, as they all do, that in a semi-conscious state she could look all through the human body, and was thus able to prescribe just what the sufferer must have to effect a cure.

The fact is, she took out more money during her eight or nine visits here than any honest physician could get in a year. Now, my brethren, these things ought not to be.

We must protect ourselves, and in so doing we will protect the poor and ignorant, who so readily fall a prey to these vultures.

I would like to say something in regard to how the Legislature of the State of Wisconsin have treated the medical profession, if time and space would allow.

Petition after petition has gone in to them, with hundreds of names signed to them, asking them to pass some law to protect our calling, and to say whether men who had not in their possession a legal diploma should be allowed to practise medicine, but all to little or no avail.

If we have no rights that the people are bound to respect, then, in heaven's name, let us do something for ourselves. Will the editor of the GAZETTE please express his opinion on this subject?

Yours respectfully,

F. T. FIELD, M.D.

ELROY, WIS.

DERMATITIS VENENATA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—The last two issues of the GAZETTE contain several articles upon dermatitis venenata, its cause and treatment, which have been of much interest to me. One point, however, was overlooked, or may not have occurred to the writers: that is, what appears to be a chronic or periodical form. Vol. x., No. 7, p. 492, article from *Journal of Cutaneous and Venereal Diseases*, the author says, "It has a tendency to a spontaneous cure, and is self-limited." In the majority of cases it does, but now and then a case turns up that, "despite" the treatment, has a way of its own. For instance, a case I have under treatment.

T. P., age 20; clerk. June 8 came to me for treatment. Face, neck, and arms affected. The disease yielded promptly to local application of

R Bismuth. subnit., ʒii ;
Sweet cream, ʒi . M.

To be applied as often as required to allay burning.

June 26 he again presented himself for treatment. Condition same as before. Ordered same recipe as before. Now during the interval between the two attacks he had not been out of town, nor had he been exposed to the poison that he was aware of. He also informed me that he had been subject to it during the last seven years, that it usually broke out on him during the spring, occurring every three or four weeks, but that

occasionally he would be attacked with it during the fall and winter. He called to see me last January for treatment for the same disease, but I was away at the time, and did not see him again until June 8, as he was only out on a visit to this place at the time. His case may be an exceptional one, or his susceptibility to the poison is so great that the mere contact with any substance that may have been in contact with the rhus will produce it upon him.

Where the bismuth and cream fail to effect a cure, I find the internal administration of a few doses of Fowler's solution and iodide of potassium combined very beneficial. Patients sometimes object to the use of bismuth on account of its turning black after a few hours' exposure to air and light, and the bother of mixing it up every time it has to be applied, but the cooling effect the cream has suffices for the trouble, and the apparent curative effect of the bismuth suffices for its blackness.

R. W. NOBLE, M.D.

BARCLAY, FALLS CO., TEXAS.

Notes and Queries.

AN EASY METHOD OF DISTINGUISHING THE SOLUTIONS OF CARBOLIC ACID USED IN SURGERY.

Carbolic acid still maintains a prominent position in the list of antiseptics for general surgical purposes. DR. MATTHEW HAY (*Lancet*, August 7, 1886) gives us a ready method of determining the strength of these solutions. The two strengths of the solution of carbolic acid in common use among those who practise antiseptic surgery are, as every one knows, one of the acid in twenty parts of water (or a five per cent. solution), and one in forty parts (or a two and one-half per cent. solution). These solutions are used for somewhat different purposes, and it is generally of some importance that the one should not be substituted for the other, the more so, as carbolic acid is not a very powerful antiseptic, and moderate dilution of it annuls its action. Now, as labels will drop off occasionally, or even the apothecary may supply by accident the weaker instead of the stronger solution, it may be sometimes desirable to be able to readily distinguish the solutions. The reagent which Dr. Hay proposes for the distinction of the solution is a saturated solution of chloride of sodium. If such a solution is added in about equal quantity to a five per cent. solution of pure crystalline carbolic acid, the

mixture becomes milky and opalescent, and the milkiness does not disappear on shaking; whereas, if added to a two and one-half per cent. solution, the mixture remains perfectly clear. The opalescence is due to the separation of carbolic acid in the form of minute drops. Chloride of sodium has a greater affinity for water than carbolic acid has, hence it is capable of displacing carbolic acid from its solution. This happens, however, only when the solution of carbolic acid is of sufficient strength. Otherwise they remain side by side in complete solution. In preparing the saline solution, it is preferable to use the pure crystalline sodic chloride employed in laboratories. This is quite a cheap substance. The advantage which this possesses over many of the ordinary varieties of common salt is that it forms a perfectly clear solution on being shaken with water, even though a large amount of undissolved salt be still present, the crystals quickly sinking to the bottom of the vessel in which the solution is being made. On the other hand, a solution of ordinary salt has often a muddy appearance, which only disappears after filtration or long standing. There is no other objection to the use of ordinary salt. The saturated solution can be prepared in quantity and kept at hand as an ordinary reagent, or it can be prepared each time as it is required. A small quantity can be made in less than two minutes, by placing some of the crystals in a test-tube, adding about an equal bulk of water, and shaking vigorously, slightly heating to 40° or 50° C., then cooling under the stream from a water-tap, still shaking, to about 15° C. (60° F.). The heat facilitates the solution without very appreciably increasing the amount of the dissolved salt as compared with that dissolved at the ordinary atmospheric temperature. It is a peculiarity of common salt that its solubility is very slightly raised by heating. It is essential to cool the solution before mixing it with the carbolic solution, for, if it be hot, the carbolic acid will not be precipitated but will remain in solution. It is needless to give directions for the preparation of the salt solution in bulk; it can be done in the usual way. It is only necessary to keep the bottle containing it in a place where its temperature is not likely in winter to be reduced to very near the freezing-point; otherwise the strength of the solution may be weakened by the deposition of the salt.

In performing the test, it is advisable to add the carbolic solution to the salt solution,—say in the test-tube,—not the salt solution to the

carbolic solution. If the addition be made slowly, drop by drop, it will be observed that each drop produces a small white cloud of separated carbolic acid, which disappears at once with a single shake of the test-tube until the carbolic solution added is equal to about one-fourth part of the salt solution, when the separated acid no longer disappears on shaking. With every further addition of the carbolic solution the amount of separated acid increases, the fluid meanwhile becoming more and more opaque. The density is greatest when from three-fourths to four-fifths parts of the carbolic solution have been added to one part of the salt solution. With further addition of the solution the acid begins to be re-dissolved and the milkiness to disappear, and the mixture becomes almost perfectly transparent when about two parts of the solution have been added. If either too little or too much carbolic solution be added to the salt solution, no permanent precipitate of the acid will be obtained. Further, if the temperature of the mixture is above 23° or 24° C. (74° F.), the carbolic acid remains in solution, the solubility of the acid rapidly increasing with the rise of temperature. Should it happen, as it rarely does in this climate, that the temperature of the room is above 24° C., the mixture can be readily cooled by tap-water, or by the evaporation of a few drops of ether or alcohol on the outside of the test-tube in which the mixture is placed. It is necessary, in performing the test, to use test-tubes or glasses which have been previously well dried. A residue of water in the test-tube may prevent the reaction, as will be made evident immediately. It may be well to remark that, on adding a two and one-half per cent. solution of carbolic acid, a slight haziness is sometimes perceptible as a drop falls into the salt solution, but this instantly disappears.

The question now naturally arises, How far can a five per cent. (1 in 20) solution of carbolic acid be diluted before it ceases to give the reaction? It is interesting to find that the addition of quite a small quantity of water is enough to prevent the reaction,—that is, no separation of carbolic acid is obtained which does not disappear on slight shaking. For it always happens that when the stronger solutions of carbolic acid are employed, they give as each drop falls into the saline solution a distinct cloud, but this is at once dissolved on being diffused by shaking through the mass of the mixture. If the strength of the solution be lowered to 4.6 per cent. (1 in 21.7), the reaction is not obtained unless the tem-

perature of the mixture is below 8° or 9° C. (47° F.); if lowered to 4.5 per cent., the reaction fails unless the temperature is below 4° or 5° C. (40° F.). A 4.8 per cent. solution gives the reaction quite distinctly, though less so than a five per cent. solution, unless the temperature is beyond 18° C. (64° F.). Hence only a solution of greater strength than about 4.8 per cent. (1 in 20.8) can be trusted to give the reaction at the ordinary average temperature of the atmosphere in this country. A solution weaker than 4.5 per cent. (1 in 22.2) will not give the reaction, though the temperature approach zero. It happens frequently that, for convenience, chemists prepare the carbolic solutions from liquid carbolic acid,—that is, acid containing usually about ten per cent. of water; and at least one of the best known makers of the acid states on the label affixed to the bottle that, in dispensing the acid, the water may be disregarded. If chemists follow this instruction, and a five per cent. solution be prepared by *weight*, it will contain only 4.5 per cent. of pure acid, and will therefore not give the above reaction. If it be prepared by *volume*, as is likely in many cases, then, as the specific gravity of the liquid carbolic acid is greater than that of water, being about 1068 (one specimen of Calvert's was found to be 1070), a solution of greater strength is obtained, containing about 4.82 per cent. of acid, and therefore of sufficient concentration to give the reaction. It is thus quite easy to distinguish by means of the reaction carbolic solutions made from liquid and from crystalline carbolic acid, if both have been made by weight.

If it is desired to render the sodic chloride solution more sensitive, it can be readily done by saturating it with carbolic acid. Dr. Hay finds that a saturated solution of the chloride at 15° C. is still capable of dissolving carbolic acid to the extent of about 0.95 per cent., or, roughly, one per cent. Such a solution is best prepared by dissolving the salt to saturation in a one per cent. solution of carbolic acid. When the solution has become fully saturated, it will have a hazy appearance, from the separation of a little carbolic acid; this can be readily removed by filtration. If this solution be used instead of the simple salt solution, then it will be found to precipitate the carbolic acid more freely than the other, and, in the case of solutions stronger than 4.5 per cent., at any temperature under 32° to 35° C. (93° F.); but this increase in the sensitiveness of the reagent is gained at the expense of diminishing its value for the purpose of dis-

tinguishing carbolic solutions slightly weaker than five per cent. from those which are stronger. The reagent is now capable of precipitating carbolic acid in any solution stronger than three and one-half per cent. In solutions weaker than three per cent.—therefore in a two and one-half per cent. (1 in 40) solution—no precipitate is formed, or, if it is, it at once disappears on shaking. If the surgeon wishes merely to possess a reagent which will readily, and at any ordinary atmospheric temperature, enable him to distinguish a five per cent. from a two and one-half per cent. solution of carbolic acid, the carbolized salt solution is decidedly preferable to the simple salt solution.

There is still another way in which chloride of sodium may be employed,—viz., for the distinguishing of very strong and very weak solutions of carbolic acid,—not the usual surgical solutions. It depends on the fact, which Dr. Hay has ascertained, that while a perfectly saturated solution of the salt is still capable of dissolving about one per cent. of carbolic acid without separation or displacement of the salt, yet a perfectly saturated solution of carbolic acid cannot dissolve more than the fragment of a crystal of the salt without the acid beginning to separate. Hence, if, on dissolving a small crystal or two of common salt in a solution of carbolic acid, the fluid becomes opalescent, and the opalescence does not appear on shaking, the solution is a saturated one,—that is, it contains about seven and one-half per cent. of acid. If, on the other hand, no opalescence appears, not even when so much salt has been dissolved in the carbolic solution, by shaking and slight heating and subsequent cooling, as that the solution has become saturated with the salt, then the original solution contains less than one per cent. of acid.

It is perhaps desirable, in conclusion, to briefly summarize the contents of this communication. The three reagents suggested are: 1. A saturated solution of chloride of sodium. This precipitates carbolic acid from solutions stronger than 4.8 to five per cent., at a temperature not exceeding 18° to 24° C. (64° to 75° F.). It causes no permanent precipitate in weaker solutions. 2. A carbolized saturated solution of carbolic acid. This precipitates carbolic acid from solutions stronger than three and one-half per cent., and it does so, in the case of solutions above four and one-half per cent., at any temperature below 32° to 35° C. (90° to 95° F.). It gives no permanent precipitate with weaker solutions.

This is the best reagent for the simple distinction of the usual surgical solutions,—two and one-half and five per cent. 3. Solid chloride of sodium. A small crystal of this precipitates carbolic acid from a saturated solution; whereas, when dissolved even to saturation in a weaker carbolic solution than one per cent., it gives no precipitate.

CONSTITUENTS OF LOBELIA.

Lobelia nicotianæfolia is indigenous to Southern and Western India; the infusion of the leaves is used as an antispasmodic. The lower part of the stem is woody, about one and a half inches in diameter; the upper part is hollow and tubular. The leaves resemble tobacco-leaves in shape, are finely toothed and hairy. The capsules are of the size of a pea, two-celled, and contain numerous light brown seeds which are about one-fiftieth of an inch long, oval, flattened, and finely striate. The dried plant is covered with numerous resinous dots, and has an acrid, biting taste. DR. H. V. ROSEN (*Amer. Journ. of Pharm.*, August, 1886) obtained from the powdered herb—

Moisture.....	12.77
Ash (of which 2.04 per cent. was soluble in water).....	9.35
Sand.....	0.47
Albuminoids and alkaloids soluble in water....	2.49
Albuminoids soluble in soda solution.....	8.23
Insoluble albuminoids.....	9.09
Cellulose.....	28.58
Fat and other substances soluble in petroleum benzin.....	3.68
Resin and chlorophyll soluble in ether.....	2.01
Mucilage soluble in water.....	2.50
Metarabic acid (pectin).....	0.27
Lobelic (?) and other vegetable acids.....	6.21
Amylaceous substances.....	1.29
Other substances soluble in water.....	1.60
Other insoluble bodies (cuticular substances, lignin, etc.).....	11.46
	100.00

The presence of alkaloids was ascertained from the acid infusion which was successively agitated with petroleum benzin, benzol, and chloroform, then rendered alkaline with ammonia and agitated as before. The benzin solution from the alkaline liquid contained the liquid alkaloid *lobeline*, and the chloroform solution when evaporated left striated prisms of another alkaloid; minute quantities of the latter were also found in the benzol solutions from both the alkaline and acid liquid, and a somewhat larger quantity in the chloroform solution from the acid liquid. The benzin solution of lobeline gives with ether and

hydrochloric acid a whitish precipitate of *lobeline hydrochlorate*, and this salt yields with Frøehde's reagent the characteristic red color passing into violet, and gives precipitates with picric acid, auric chloride, and with bromine in potassium bromide. The second alkaloid yields heavy precipitates with the usual reagents, except picric acid and tannin, which cause in the solutions a slight turbidity; Frøehde's reagent gives a brown color changing to green, and sulphovanadic acid causes a cherry-red or violet-red coloration.

The same two alkaloids were also obtained from *Lobelia inflata*, *Lin.*, though the volatile lobeline was present only in minute quantity, the herb having been on hand for a prolonged time.

The physiological experiments were made with lobeline sulphate prepared by Merck, and with the two alkaloids obtained from the above species obtained by Dr. Ott, though the author's explanation differed somewhat from Dr. Ott's.

LOSS OF WEIGHT IN EPILEPSY.

DR. F. HALLAGER, assistant physician to the lunatic asylum at Viborg, has endeavored to find an explanation of the diminution of the weight of the body after an epileptic attack. Kowalewsky was the first to draw attention to this fact. He states "that all persons suffering from any form of epilepsy lose in weight after each attack." "This occurrence is not equally great in every case, but depends on the duration of the disease and the intensity of the attack. The loss of weight is greatest after the first attack of a series of epileptic fits." Dr. Hallager has drawn up a table indicating the weight of the body and the quantity of urine and fæces excreted by the patients each day during his researches. Solid or liquid nourishment was given to the patients in proportion to the frequency and violence of the attacks. By a chart accompanying the paper in the *Nordisk. Med. Arkiv* it appears that whenever the curve of weight is considerably depressed after an attack there is also a corresponding elevation in the urine curve, of which no explanation is afforded by any increase of diet. When a loss of several pounds takes place, it is owing to the secretion of an abnormal quantity of urine. Dr. Hallager has been unable to determine whether the production of urea is also increased by the attack, but he believes the increased formation of urea is not sufficiently great to be of importance in the loss of weight. The dimi-

nution of weight caused by an epileptic attack he considers to be due to an increased secretion of urine after the fit. M. Kowalewsky insisted that psychic epilepsy, as well as the *grand* and *petit mal*, is followed by a diminution of weight. This is contrary to Dr. Hallager's opinion, who believes that there is no diminution during this psychic state except when the patient refuses all nourishment, and that the quantity of urine secreted is much less than normal. This is no doubt due to a reaction after the preceding augmentation. The fact that psychic troubles of an epileptic origin (especially when of long duration) may, like other maladies, cause a loss of weight, is natural; but this loss, which arises from general emaciation, has nothing in common with the diminution of weight after an epileptic attack, which results from a diminution of the quantity of water in the body, due to preceding augmentation of urine.—*Lancet*, August 21, 1886.

UNTOWARD EFFECTS OF PARALDEHYDE.

In 1884, acting on the suggestion of Dr. Keraval, DR. JAS. G. KIERNAN tried paraldehyde as a means of securing slumber in excited cases. It was generally stated that paraldehyde had all the good qualities of chloral hydrate, without its bad effects. At first sight such a statement was improbable, because the evil and good effects of chloral hydrate arise from its physiological action, and any remedy having the good effects of chloral hydrate must have the bad effects in a minor degree.

He found, after very careful experimentation, that paraldehyde produced irritation of nearly every mucous membrane in the body as a secondary consequence of its soporific effect; that it markedly impaired digestion; that scarlatina form skin eruptions, attended by itching and scaling off of the skin, frequently followed its use. Irritation of the eyes was as frequent as after the use of chloral hydrate. The same intractable nail ulcers followed its brief use, as so frequently follow the long-continued use of chloral hydrate. Paraldehyde, in his hands, has shown all of the untoward results of chloral hydrate, while the slumber produced by it has been neither so profound nor so refreshing as that produced by the latter. None of these results were due to methods of administration or impurities of the drug. In his opinion it hardly comes up to the requirements of a hypnotic.—*Western Druggist*, September, 1886.

BACTERIUM TERMO TREATMENT.

DR. ROQUER Y CASADESUS, of Barcelona, having a case of laryngeal and pulmonary phthisis of an advanced character, and wishing to test the value of Cantani's bacteriotherapeutics, asked Dr. Rodriguez Mendez, a well-known microbiologist, to assist him. The condition of the patient was carefully ascertained in consultation, cavities being found in both apices. There was a high temperature, also profuse sweats, diarrhoea, profuse expectoration, great dyspnoea; in fact, every sign of acute pulmonary tuberculous degeneration. The patient was in the seventh month of pregnancy. A pure culture of bacterium termo was then prepared by Dr. Botey, and made use of both by means of inhalations twice a day and by intra-laryngeal applications. After a few days the patient's condition was improved, the temperature having fallen from 39° to 38° or 38.4° C. This improvement continued till labor came on, which was of a normal character, but shortly after delivery the woman's condition became alarming, and she died in twenty hours. Dr. Roquer concludes from this case that, whether the remission of temperature was or was not due to the treatment, the bacterium termo was perfectly innocuous, as Professor Cantani states it to be. Dr. Philipovich, who has made several trials of the treatment of phthisis by the inhalation of cultures of bacterium termo, has published a paper describing the results obtained in the reports of the Odessa Medical Society. In one case the inhalations had to be stopped in consequence of the condition of the patient becoming worse, three cases died, and two were discharged. Dr. Philipovich's observations agree in general with those of Dr. Görbersdorf, and are decidedly inconsistent with those of Professor Cantani. The expectoration did not diminish, but it was rather more easily secreted, and so the dyspnoea was less. This, however, was probably due to the action of the water and the better aeration of the lungs rather than to the microbe. In one case the quantity of sputum was increased, and it became more liquid and very offensive. At the necropsy in this case cavities were found containing tolerably pure cultures of bacterium termo. In none of the cases did the tubercle-bacilli in the sputum disappear or even diminish, though the inhalations were continued for seven weeks. Again, no effect was produced on the temperature or sweats, and in all the patients there was noted a greater or less loss of weight. The author concludes that no beneficial effect can be

looked for from the use of this method of treatment; indeed, it would rather appear, from the post-mortem appearances above mentioned, that inhalations of bacterium termo may be positively hurtful to the human organism.—*Lancet*, August 21, 1886.

SACCHARIN.

The conclusions arrived at by Stutzer concerning the innocuousness of saccharin when taken into the human body have recently been confirmed by PROF. SALKOWSKI (*Virchow's Archiv*, cv. p. 46); and PROF. DRESCHFELD, of Owens College, Manchester, has ascertained that when given in diabetes it does not affect either the quantity or the sugar passed. It has scarcely any retarding effect on the digestion of either proteids or carbohydrates, and in two cases of acid dyspepsia it was found to relieve some of the troublesome symptoms. It has also been found that added in small quantities it increases the diastatic action of malt in the presence of sugar.—*Pharm. Journ. and Trans.*, August 28, 1886.

TESTS FOR THE PURITY OF MILK.

What process affords the simplest and most accurate tests for determining the quality of milk, was the subject of a paper read before the Massachusetts Pharmaceutical Association by W. W. BARTLETT (*Western Druggist*, September, 1886), who called attention to the various procedures used by adulterators of milk, and discussed various methods of discovering the same, giving preference to Wanklyn's method. Milk should have a specific gravity at 60° F. of 1029 to 1033; if fresh, should have a slight acid reaction; alkaline reaction in alleged fresh milk indicates adulterants; excessive acid reaction indicates lactic fermentation. The cream should be determined by a 100 c.c. tube, graduated into cubic centimetres, and the volume read off at the end of twenty-four hours. The total solids are then determined as follows: If a porcelain capsule be used to evaporate the milk, a small amount of pure white sand should be added to the latter, after having been washed, heated red, cooled, and then weighed with the capsule (the sand breaks the film formed on the drying milk). It is best, however, to use a perfectly flat-bottomed platina capsule, two and one-quarter inches in diameter and one-half inch deep. The capsule, being perfectly

balanced on the scales, five grammes of milk are carefully weighed into it. The dish is then placed on a water-bath, heated till apparently dry (takes about one to one and one-half hours). It is then placed in a hot-air oven, and exposed to a heat of 220° F. for half an hour, by which time its weight will be constant. The difference between the weight of the empty capsule and its present weight will be the weight of the solid constituents of the milk. The capsule and contents are next placed upon a water-bath, and boiled with three successive portions of petroleum benzine, decanting off each portion carefully after boiling for a minute. The capsule is then carefully washed off with benzine, dried in the oven, cooled in a desiccator, and quickly weighed; as the fat is removed by this process, the difference between this last weight and the former is the weight of the fat. The other solids ignited at a red heat yield the percentage of inorganic salts. The amount of water present is easily determined. Thirteen per cent. of water found in each sample in excess of eighty-seven per cent. allowed by law, represents one per cent. of added water. The amount of milk-sugar may be determined by a standard Fehling's solution, or the polariscope; the last yields the best results.

TRIBROMIDE OF ALLYL.

Tribromide of allyl is another compound that has only had its possible use in medicine discovered after a period of years. It was first prepared by Wurtz in 1857 (*Ann. de Chimie*, li. 91) by the reaction of iodide of allyl on one and a half times its weight of bromine, and is a colorless liquid, soluble in ether, boiling at 217° C., and having a specific gravity of 2.436. According to DR. DE FLEURY (*Archives de Pharm.*, August, page 352), this compound has been employed with good effects in hysteria, asthma, angina pectoris, and infantile convulsions. It was administered in capsules, each containing 5 drops, two to four capsules being given daily, or subcutaneously in doses of 2 to 4 drops dissolved in one or two cubic centimetres of ether.—*Pharm. Journ. and Trans.*, August 28, 1886.

DR. SCHMITZ, of Bonn, reports in the *Centralbl. f. Kl. Med.* vii., 15, 1886, two cases in which the vapor of carbolic acid (employed in pneumonic catarrh and diphtheria) caused clonic-tonic convulsions.

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Original Communications.

ON THE BEVERAGES IN COMMON USE.*

BY PROFESSOR DUJARDIN-BEAUMETZ.†

GENTLEMEN:—In the previous lectures I have spoken of complete and complex aliments; it remains for me to consider the drinks in ordinary usage, and this will be the subject of this day's lecture. For convenience I shall treat of beverages under three heads,—

* A lecture on Hygienic Therapeutics. Translated from advance sheets.

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water, aromatic beverages, and alcoholic beverages.

Water plays an indispensable part in the alimentation of man, constituting more than two-thirds (seventy per cent.) of the bulk of the organism. It cannot, then, be omitted from the daily rations of man, and, if we include in our estimate the aqueous principles contained in foods, a man ought to consume three thousand grammes (or somewhat more than three quarts) of water a day.

I cannot here do more than touch upon this question, which is so important from a hygienic point of view, and if I were to attempt to treat the subject of drinking-waters with any proper degree of fulness I should require several lectures. Therefore I can only call

your attention to a few points of interest which have especial reference to hygienic therapeutics, then I shall briefly consider water in reference to certain general properties, and I shall lastly allude to the mineral waters (called table-waters), natural and artificial.

Water contains air and salts. The presence of air is absolutely necessary to render water potable. Boussingault insists that such water should contain at least from twenty-five to fifty cubic centimetres of gases per litre. These gases should consist of from eight to ten per cent. of carbonic acid, and of a mixture of oxygen and nitrogen containing from thirty to thirty-seven per cent. of oxygen and sixty-three to seventy per cent. of nitrogen.

When water is deprived of these gases it becomes "flat" and indigestible, as is the case with boiled water and the water that melts from the glaciers. Boiled water must first be aerated by churning before it is fit to drink, and glacier water becomes aerated naturally as it forms cascades in its course.

Are the salts also as useful as air in rendering water potable, and is drinkable water fairly represented by water which is chemically pure, corresponding exactly to the formula H_2O ?

In France, since the experiments of Dupasquier, and those especially of Boussingault, the opinion prevails that the mineral ingredients, carbonates, sulphates, etc., must attain at least the figure of fifty centigrammes per litre in order that water may be fit for drinking purposes. These salts are absolutely necessary for the constitution of the skeleton, especially in the early life of man and animals. In England this view is not entertained, and Frankland has given expression to the opinion that as man finds in his food the quantity of lime necessary for his nutrition, the water which he drinks is the purer and better the more it resembles distilled and thoroughly aerated water. However this may be, when the proportion of calcareous salts is too high, the water becomes hard, and is liable to cause constipation.

Therapeutics has utilized the properties of these limy waters in the treatment of diarrhoea, persons suffering from this affection being often benefited by drinking the hard water of certain wells; and lime-water, which is the familiar combination of water and slaked lime, renders us great services in diarrhoeas (especially in infantile therapeutics); the constipating properties of milk are augmented by the addition of lime-water.

Water contains a great number of micro-organisms, the study of which has so recently been made, and the schizomycetes of various waters have been analyzed. In this interesting line of study Marié Davy and Miquel, at the Observatory of Montsouris, have made valuable contributions. Taken in their aggregate, these micro-organisms may be divided into three groups. Those of the first are favorable to the health of those using the waters, those of the second are indifferent, those of the third injurious.

The first assimilate the carbon and eliminate the oxygen of carbon-dioxide; they aerate the water. This is the office of certain algæ containing chlorophyll, and especially the rôle of diatoms. The baneful micro-organisms consist of the microphytes of putrefaction. They set free nitrogen under the form of ammonia, and render the water putrid and injurious.

The waters of drinking sources may also contain the micro-organisms of infectious diseases, among which the bacteria of cholera and typhoid fever claim especial mention. Lastly, the ova of various entozoa may also infect sources of water-supply, and it is, as you know, through the contamination of water with the dejections of dogs infested with the *Tænia echinococcus* that man, drinking this water, becomes the victim of hydatid cysts.

Leaving one side the "infinitely little," one may, as Gérardin has shown, judge of the quality of any kind of water by its flora and fauna. As for the flora, if the water-cress (*Nasturtium officinale*) is not, as it is held to be in popular estimation, the health of the body, it is the health of the streams. Wherever it grows the water is wholesome, while, on the contrary, the duck-weed, or water-lentil (*Lemna minor*), always indicates a water of bad quality. As for the fauna, it is everywhere known that the water of streams which are deprived of fishes and mollusks is unfit for drinking purposes.

The temperature of water destined to be drunk is a matter of some importance. Water when iced stimulates the digestive functions when taken in small quantity, and lowers the temperature. Liebermeister estimates this depression of temperature at $0.45^{\circ} C.$, and Winternitz at $0.22^{\circ} C.$ for the axilla. The usage of ice-water, however, when prolonged, leads to diarrhoea and intestinal irritation, and doubtless much of the gastro-intestinal disorder of countries where free use is made of ice-water is due to this cause.

As for the refrigerant action in general of

cold water, if it may be the determining cause of pulmonary and other congestions, as has been observed as a sequel to lavage of the stomach with too cold water, it may, nevertheless, be utilized as a powerful antithermic means in the febrile process: in fact, in pneumonia and typhoid fever we derive a real advantage from the use of cold drinks.

Warm water, on the other hand, determines a rise in the temperature of the body, and it may be affirmed that all our sudorific herbs, with the exception of such as may contain *jaborandi* and its alkaloid *pilocarpine*, which act directly on the sweat-glands, owe their property not to the medicinal principles which they contain, but to their temperature. These hot draughts render us great service, as is known, in the initial periods of eruptive fevers, but they are likely to disturb digestion and provoke vomiting, and they do not quench thirst.

All parts of the digestive tube may absorb water. This is so true of the buccal mucous membrane, that liquor-tasters—a class of professionals whose business it is to test the quality of liquors by holding a mouthful, mingled with air, in their mouth, and then spitting it out—have been known to experience more or less intoxication from the simple testing of liquor in this way, and many a liquor-taster has become a drunkard. It is, however, in the intestine that the absorption of liquids principally takes place. Bécларd has shown that water passes very rapidly into the intestinal canal. He has found it two minutes after being swallowed in the duodenum of a man the subject of a duodenal fistula, and, six minutes after being swallowed, in the cæcum of a horse.

I have in my hospital service instituted another series of experiments, showing with what rapidity water disappears from the stomach. In a patient affected with a slight degree of dilatation of the stomach, after having well emptied the gastric cavity by means of a stomach-pump, I introduced a quart of water. At the end of an hour there remained but a half-pint in the stomach. On frequently repeating this experiment, I have found that, on an average, a quart of water per hour will pass from the stomach into the intestine.

The water after being absorbed is rapidly eliminated by the kidneys; it never accumulates in the blood, and determines no alteration of the hæmoglobin. Leichtenstern, in an individual who had drank seven quarts of water, found no modification in the composi-

tion of the blood. This rapid absorption, and no less rapid elimination of water by the urine, sufficiently explain the diuretic effects of water, and my regretted master, Bouchardat, was right in saying that water is the best and most powerful diuretic.

The greater part of our mineral waters, called diuretic waters, such as Contrexville, Evian, Vittel, etc., are only such by virtue of being well tolerated by the stomach, and their ready absorption and elimination. This diuretic action of water is of exceeding importance, and the numerous applications thereof will be apparent in the course of these lectures. As for the action of water on nutrition, I shall not refer to this again. Already, in a previous lecture on the primordial alimentary principles, I showed you that experimenters have arrived at different conclusions, one party maintaining with Genth, Bischoff, Forster, Henneberg, Stohmann, Schmiedeburg, Germain-Sée, Albert Robin, that water augments the excretion of urea, and may be considered as an agent of disassimilation; the other party, basing itself on the very accurate experiments of Débove and Flamant, claiming that water has no influence on the excretion of urea, nor can it be said that the question is yet definitely settled. I come now to the subject of the table mineral waters.

In the volcanic region of Central France (Auvergne) we find a great number of springs charged with carbonic acid. These waters, which do not differ in their composition save in the quantity of carbonic acid which they contain, constitute our principal table mineral waters; chief among them are St. Galmier, Condillac, Chabetout, Mornay-Châteauneuf, and De l'Ours. These table-waters are pleasant to take and of great purity. By the carbonic acid which they contain they quiet the stomach and regulate digestion. Their purity makes them especially sought after in times of epidemic. At the same time it will not do to use them exclusively, for they get the stomach accustomed to their stimulation so that it will not digest food without the help of its gaseous draught, and they eventually exhaust the stomach. Lastly, do not forget that certain patients are absolutely rebellious to the administration of these effervescent waters, which may provoke in such persons irritations of the digestive tube.

In connection with these natural mineral waters, I shall say something about the artificial seltzer waters, manufactured now on so large a scale. They are in reality not nearly so good as the natural, and by reason of the

low price of the latter, there is but little justification for the substitution.

Moreover, the closeness of union between the carbonic acid and the water which exists in the water as it flows from the springs cannot be imitated in any artificial combination. When the manufactured seltzer water is drunk the gas escapes with too much force and volume, and may oppress the stomach; besides, the gas with which the water is charged may contain impurities from faults in its fabrication. Moreover, the presence of the carbonic acid in the water is no guarantee of the purity of the latter, whose source may not have been free from pollution. Lastly, according to Armaud Gautier, the metallic armatures of the siphons contain lead, and this metal is almost always found in the artificial seltzer waters.

I have finished what I had to say regarding water, and I come now to our second division, which comprises the aromatic beverages.

Under the head of aromatic beverages I propose to speak exclusively of such as contain a certain alkaloid, with the formula $C_8H_{10}N_4O_2$, which Runge, in 1820, found in coffee, and to which he gave the name *caffeine*, which Oudry, in 1827, found in tea, and which he called *theine*, which Martins discovered in the *Paullinia sorbilis*, and which finally Hæckel and Schlagdenhauffen have isolated, along with theobromine, in kola nuts.

In order to simplify the exposition into which I am about to enter, I will admit that all these alkaloids are identical, although I know very well that it is by no means demonstrable that isomeric bodies have absolutely the same physiological action. I shall not touch upon the different hypotheses which have been put forth relative to the atomic composition of this body. I have already called attention to this point in a recent study on the derivatives of caffeine.* I have shown that if, according to Strecker, caffeine is only the methyltheobromine, according to Fischer, on the contrary, caffeine and theobromine are derivatives of xanthine; theobromine is the bimethylxanthine, while caffeine is the trimethylxanthine. But I cannot now take up your time with these chemical researches.

All the aromatic beverages containing caffeine (or the isomeric alkaloids above mentioned) for their bases are used in immense quantities all over our globe, and their em-

ployment is much more extensive than that of alcoholic beverages.

Many opinions have been put forth as to the physiological and hygienic action of coffee. These may be reduced to three hypotheses. Coffee diminishes the excretion of urea and is a waste-restrainer; it does not modify the urea excretion, and is a force-producer; or, lastly, it acts as a food, supplying elements of nutrition.

The first view is supported by Schultz, Gasparin, Boker, Lehman, Frœlich, Trouseau and Pidoux, Rabuteau, Marvaux, etc., who claim that coffee diminishes the quantity of urea excreted; that it does not nourish, but that it prevents denutrition. This is the waste-restraining-aliment theory.

But to facts advanced by these physiologists other facts are opposed, and we see Roux and Giraud in France, Binz in Germany, Brackenridge in England maintain that coffee, as well as caffeine, in no respect modifies the figure of urea. Hence Gubler, basing himself on the researches of these authorities, affirms that coffee has no action on nutrition, but that it is a tonic, or, rather, a force-producer.

Lastly, Payen has shown that coffee contains nitrogen, and this in quite notable proportion, since in green coffee this essential element exists in the proportion of 4.48 per cent., and in roasted coffee in the proportion of 1.75 per cent. He shows, moreover, that the admixture of coffee with milk, in ordinary usage in many parts of the world as a breakfast beverage, is one of the most nutritious of all drinks, a mixture of 500 gms. of infusion of coffee, 500 gms. of milk, and 75 gms. of sugar containing, according to his estimate, 49 gms. of nitrogeneous substance and 100 gms. of hydrocarbon and salts.

This view has been adopted by Fleury, Bouchardat, and Jomand, and is supported by facts, being in accordance with the experience of entire populations (in England, Germany, Switzerland, and the United States), who find sustenance in their breakfast dish of coffee.

Coffee is, then, by virtue of the nitrogen which it contains, a food, and you remember that in the primordial alimentary principles I included caffeine among the azotized substances. Moreover, recent experiments of Guimaraës show positively that augmentation of urea follows the administration of coffee.†

* Dujardin-Beaumetz, "On the Physiological and Therapeutic Properties of the Derivatives of Caffeine" (*Bull. de Thér.*, 1886, t. cx. p. 241).

† Guimaraës, "On the Physiological and Hygienic Action of Coffee" (*Arch. de Phys.*, 1884, t. iv. p. 253).

But is coffee anything but an aliment? It possesses special tonic properties on the circulation and nervous system. All experimenters are agreed in the fact that under the influence of coffee the beatings of the heart become more rapid and more energetic, the circulation more active, and the urine more abundant. Leblond's study has given us in this regard tracings of high importance. Moreover, whether by the activity which it impresses on the circulation, or by a direct action on the nervous elements, coffee directly affects the brain, and may be called "a cheering and thought-inspiring beverage."

This threefold action, on nutrition, on the circulation, and on the nervous system, makes coffee an admirable tonic, and we are justified in saying that it is largely by reason of the strong coffee, which habitually forms a part of their diet, that our troops have been enabled in the burning climate of Algiers to endure the most exhausting campaigns.

It is also owing largely to the coffee, which is becoming more and more an article of daily consumption among the farmers in the country, that we see this class of people able to endure the great increase of toil to which they are subjected in haying and harvesting seasons.

Coffee, in order to be fit for nutrition, must first be torrefied. Payen has made a special study on the modifications which coffee undergoes by roasting, and has shown that during this process there is a breaking up of the chlorogenate of potassium and caffeine, and a setting free of a part of the caffeine held in combination.

I cannot here touch upon the different modes of preparing coffee, modes by which the properties of roasted coffee are doubtless more or less modified. While in Europe it is the infusion which is drank almost exclusively, the inhabitants of the East prefer the decoction, and, if we may believe their statement, the decoction, while preserving the tonic and alimentary properties of the coffee, is quite devoid of the exciting properties which characterize the infusion.

The different physiological properties of coffee have caused this food medicine, and its congeners, tea, Paraguayan maté, guarana, and kola, to be applied to the treatment of a great number of affections. Its tonic action on the circulation has led to its use in the treatment of diseases of the heart, and Gubler, Lépine, and Huchard have shown us all the advantages derivable therefrom. Its di-

uretic properties have led to its being recommended in dropsies, urinary gravel, and gout. Its cerebral tonic action has rendered it useful in the treatment of migraine and cephalalgia. Lastly, we see its utility recognized in intestinal strangulations and opium-poisoning.

I have finished what I wished to say concerning coffee, leaving aside what appertains to infusions made from roasted acorns and chiccory, which contain nitrogen, and probably have some food value, but are devoid of caffeine, and therefore of the tonic and excitant properties of coffee.

It remains for me to speak of alcoholic beverages. This is a topic of special interest and importance, and you will permit me to dwell on it at some length. We will study successively alcoholic beverages in general, then the physiological action and digestibility of these beverages. As for alcoholic beverages in general, I shall divide them into three classes: the first includes wine; the second, cider, perry, and beer; the third, distilled spirits and aromatized liquors.

Wine.—It is a profound mistake to suppose that wine is only a mixture of water and alcohol. It is a complete *living whole*, if I may so express myself, all the elements of which constitute so complex and homogeneous an aggregate that we cannot alter any one of them without introducing profound modifications into the composition of the wine. Apart from the water and the alcohol, wines contain glycerin, tannin, essential oils, ethers, salts, and, in particular, tartrates; and, according to the period when you examine the wine, the quantity of these different elements varies.

Wine is, in fact, as I just told you, a living thing, by the fermentations which it undergoes. It has its youth, its maturity, and its old age. Such crude wines as those of Burgundy are short lived, and their old age is early. Other crude wines, like those of Bordeaux, have a much longer life, and to hasten their maturity are even sent to distant places. Lastly, wines have their diseases, which generally result from want of skill in their fabrication, and from a vicious fermentation determined by the presence of impure products.

The following table from Chevalier and Bandrimont gives the percentage of alcohol in different wines:

Wine of Marsala.....	23.83
" " Red Madeira.....	20.52

Wine of White Madeira.....	20.00
" " Port.....	20.00
" " Bagnols.....	17.00
" " Malaga.....	17.42
" " Roussillon.....	16.88
" " Malaga.....	15.00
" " Chypre.....	15.00
" " Red Jurançon.....	13.70
" " Lunel.....	13.70
" " d'Angers.....	12.90
" " Champagne.....	12.77
" " Grave.....	12.30
" " White Beaune.....	12.80
" " Frontignan.....	11.80
Effervescent Wine of Champagne..	11.77
Wine of Cahors.....	11.36
" " White Mâcon.....	11.00
" " Volnay.....	11.00
" " Orléans.....	10.66
" " Red Bordeaux.....	10.10
" " Larose.....	9.85
" " Pouillac.....	9.70
" " White Vouvray.....	9.66
" " Château-Latour.....	9.33
" " Léoville.....	9.10
" " White Pouilly.....	9.10
Wine on retail in Paris.....	8.80
Wine of Château-Margaux.....	8.75
" " Château-Lafitte.....	8.73
" " White Chablis.....	7.88

By glancing over this table you can judge how variable are wines in respect to their richness in alcohol. From a fiscal point of view, all wines having more than twenty-five per cent. of alcohol are considered as liquors, and all that are above 15.90 per cent. pay double duties. This limit ought to be made even lower, and no wines that contain more than ten or twelve per cent. of alcohol should be allowed to pass for wines of ordinary consumption. Bear in mind, in fact, that our table wines, and our most celebrated raw wines,—the Château-Lafitte, the Château-Margaux,—do not contain more than 8.75 to 8.88 per cent. of alcohol, and that our wines of Central France scarcely have seven per cent.

If I insist so much on this point, it is because vehement debates have been aroused in our legislative assemblies and in the Academy of Medicine concerning vinage, or the alcoholic adulteration of wines. I am a thorough opponent of the right of vinage, which, by introducing into wines foreign spirits, modifies and profoundly changes the wine; in fact, in my estimation, spoils it. By the commercial treaties which bind us to Spain, and which allow the introduction of wines with sixteen per cent. of alcohol, we see all the spirits of bad quality fabricated in Germany enter our country under the cover of wine.

These wines thus alcoholized entail deplor-

able consequences on public hygiene, and they have substituted for the drunkenness resulting from the abuse of wine all the worst evils of intemperance seen in other countries where alcoholic stimulants of bad quality are in common use, and we see the fruit of this abundant consumption of strong wines in the grave disorders of the nervous system and the other tissue-degenerating diseases now so prevalent.

But the limits of this lecture will not allow me to dwell further on the alcoholization of wines, which is a subject of the greatest importance.

From a medical point of view, wines may be considered under four heads,—the strong wines, the red wines, the white wines, and the sparkling wines.

The strong wines are those which contain fifteen per cent. or more of alcohol. These are generally dry wines, which, by their great richness in alcohol, are indicated in febrile maladies and states of prostration where stimulants are required. Unquestionably, the wines of Marseilles, of Madeira, of Malaga, also sherry and port, are superior to Todd's potion, which is ordinarily prescribed in our hospitals.

The red wines, by the tannin which they contain, are the tonic wines *par excellence*. Their intoxicating power is not necessarily in relation with the alcohol which they contain, but rather with the ethereal principles which enter into their composition; and I need only remind you here of the distinction, so well recognized, between the Burgundy and the Bordeaux. The first, by the heady "bouquets" which distinguish them, excite the brain much more than the Bordeaux wines; hence it is that the latter are the most often prescribed in sickness.

The white wines, which contain much less tannin than the preceding, because, being made from the black grape, they owe their white color to the fact that they were not kept in prolonged contact with the skins and pulp of the grape, contain, on the other hand, more of the potassic tartrate. They are the diuretic wines *par excellence*, and even Hippocrates noted their action on the kidneys. Certain of these white wines which are a little tart, when diluted with our alkaline waters, constitute an agreeable beverage and possess undisputed diuretic properties.

As for the effervescent wines, of which the type is champagne, they render us important service in medicine. By the carbonic acid they contain, and which is intimately com-

bined with them, they have a marked calmative action on the mucous membrane of the stomach; hence whenever, in cases of irritation of that viscus with vomiting (as in peritonitis), there is indication for an alcoholic stimulant, these sparkling wines serve a good purpose. Here we often find nothing better than iced champagne, whose effects not seldom are marvellous.

The second class of alcohols consists of the fermented beverages,—cider, perry, and beer; the two former, which are the product of the fermentation of apples and pears, are widely in use in France. Girard, the director of the municipal laboratory of Paris, who has made a careful analysis of cider, has shown that an ordinary sample of this fermented beverage contains five to six per cent. of alcohol, about three per cent. of ash, and watery extract in the proportion of about one ounce per quart. As for the sweet ciders, they contain a much smaller quantity of alcohol, which does not exceed 1.70 per cent.

Apart from the alcohol which enters into its composition, cider contains a large quantity of alkaline salts, phosphates, carbonates, malates, etc.; hence it is that cider is diuretic, and Denis Dumont has highly extolled the usage of this beverage in the treatment of gout and the uric acid diathesis. The considerable proportion of potassic salts which it contains also renders it slightly purgative; and hence it is that cider is much resorted to by some persons for a laxative effect.

Compared with cider and perry, beer, ale, and porter are of much more general usage, and it may be affirmed that in Europe there are more beer-drinkers than wine-drinkers.

Beer, as you know, results from the fermentation of the starch contained in certain grains. During germination the starch of the grain is transformed by the vegetable diastase into grape-sugar, and this natural process is utilized in the fabrication of beer by the fermentation or maltage of barley. To this sweet infusion of malt or wort is added infusion of hops, which communicates its special taste, and the fermentation is effected either under heat or cold.

We find in the fermentation of beer a demonstration of the laws established by Pasteur, that each of these fermentations has its special organic conditions, the high yeast corresponding to the fermentation which takes place at from 15° to 20° C., and the low yeast corresponding to that which takes place at 4° or 5° C. Lastly, an impure kind of malt

yeast—the *saccharomyces Pastorianus* of Ress—produces a bad fermentation of the beer.

These beers, if we may trust Girard's analysis, which I place before you, contain a proportion of alcohol varying from three to seven per cent. The strongest beers, as you well know, are the English.

Beers which contain less than three per cent. of alcohol are called small beers, or beers of consumption, and must be drank as soon as made or they will spoil.

These malt liquors are very diuretic, and this property is largely proportioned to the quantity imbibed. The beer-drinker is not easily satisfied, for beer is a beverage that is not good to quench thirst. The more one drinks of beer the more he wants to drink, and it suffices to go through the breweries of certain countries, as those of Munich, to see what enormous quantities a man can drink. Some have been known to exceed twenty quarts a day. Fortunately, however, owing to the diuresis which it excites, a quantity so excessive does little but pass through the economy, transforming the beer-drinker into a veritable filter. This continued stimulation of the kidneys, however, is not unattended with serious evils, and we see renal degenerations follow the forced labor to which these glands are subjected.

CENTESIMAL COMPOSITION OF BEERS.

	Alcohol. Mean.	Extract. Mean.	Ash. Mean.
<i>French Beers.</i>			
Strasbourg.....	4.7	4.65	0.32
Lille.....	4.1	4.65	0.35
Paris.....	3.5	6.00	0.35
Nancy, Tantonville, etc.....	5.6	5.70	0.9
Lyon.....	5.5	5.00	0.9
<i>German Beers.</i>			
Saxony.....	3.7	5.8	0.25
Bavaria.....	4.5	7.2	0.29
Hanover, Holstein, Pomerania.	4.2	5.9	0.25
<i>Austrian Beers.</i>			
Vienna, Moravia.....	3.5	6.1	0.20
Bohemia.....	3.6	4.7	0.20
<i>English Beers.</i>			
Ale of exportation.....	7.3	5.9	0.35
London porter.....	5.2	6.4	0.32
<i>Belgian Beers.</i>			
Lambic.....	6.02	3.7	0.32
Faro.....	4.15	4.2	0.32
Barley beer.....	4.35	3.4	0.32
Different beers.....	5.8	5.5	0.32

By the diastase which they contain these malt beers supply a nutrient which has a digestive action on the carbo-hydrate aliment-

ary principles; hence vegetarians ought to be beer-drinkers. Certain liquid malt preparations in the markets (Hoff's, Wyeth's, Nicholson's, etc.) are beers rich in diastase and dextrine. Lastly, there are medicinal beers charged with hops, scurvy-grass, horse-radish, pine-buds, Peruvian bark, and called "tonic," "antiscorbutic" beers, preparations very little used, at least in France.

The third group of alcoholic beverages comprises distilled spirits and aromatized liquors. The consumption of these liquors is everywhere on the increase. In some years it has been enormous, and there is no reason as yet to predicate a decreasing ratio. In France the quantity of pure alcohol consumed in 1850 was five hundred and eighty-five thousand two hundred hectolitres; the past year it has been four times that amount, or almost two million hectolitres.

All the efforts put forth by the various governments to stay the increase in the use of distilled liquors have thus far failed. Increased taxation of spirits, severe penalties against drunkenness, diminution in the number of grog-shops, none of these things have availed. The temperance societies themselves, notwithstanding the augmentation of their membership, and notwithstanding the rigorous exclusion of every kind of alcoholic beverage, have done but little to retard the progress of intemperance. I am assured, however, that this statement is not strictly true as applied to some parts of the United States.

We see in this almost universal spread of drunkenness one of the saddest facts connected with the age in which we live.

The alcohols due to fermentation constitute a natural chemical series, of which the formulæ go on increasing from ethyl alcohol to amyl alcohol, thus:

Ethyl alcohol, C_2H_5O ; propyl alcohol, C_3H_7O ; butyl alcohol, C_4H_9O ; amyl alcohol, $C_5H_{11}O$.

In the work undertaken by Audigé and myself "On the Toxic Power of the Alcohols,"* we showed that the degree of toxicity of these bodies followed in almost a mathematical ratio their atomic formula, and the following tables which I place before you sum up the results which we obtained in our first experiments which pertained to acute alcoholism.

TABLE A.—DEGREE OF TOXICITY OF THE PRIMORDIAL ALCOHOLS.

Group of alcohols.	Designation of the alcohols and their derivatives.	Medium toxic doses per kilogramme of weight.	
		In the pure state.	In the state of dilution.
Alcohols of fermentation.	Ethyl alcohol (C_2H_5O).	Grammes. 8.00	Grammes. 7.75
	Propyl alcohol (C_3H_7O).	2.90	3.75
	Butyl alcohol (C_4H_9O).	2.00	1.85
	Amyl alcohol ($C_5H_{11}O$).	1.70	1.50
	Chemically pure methyl alcohol (CH_3O).	.....	7.00
Alcohols not of fermentation.	Ordinary wood spirit.	.....	5.75
	Ceanthyl alcohol ($C_7H_{15}O$).	8	
	Cetyl alcohol ($C_{18}H_{37}O$).	7.50	
Iso-alcohols.....	Iso-propyl alcohol (C_3H_7O).	.....	3.70 to 3.80
Poly-atomic alcohols.	Glycerin ($C_3H_8O_3$).	.....	8.50 to 9.00
Derivatives of alcohols.	Acetic aldehyde (C_2H_4O).	.....	1.00 to 2.00
	Acetic ether ($C_4H_8O_2$).	.....	4.00
	Acetone (C_3H_6O).	.....	5.00

TABLE B.—DEGREE OF TOXICITY OF THE ALCOHOLS OF COMMERCE.

Ethyl alcohol and the alcohols of commerce.	Medium toxic dose, which, per kilogramme of the weight of the dog, will kill within 24 or 36 hours.	
	Crude spirit.	Rectified.
	Grammes.	Grammes.
Ethyl alcohol (dilute).....	7.75	
Fine wine spirit of Montpellier.....	7.50	
Brandy made from perry (by distillation).....	7.35	
Cider brandy, and that obtained by distilling the marc of grapes.....	7.30	
Alcohol obtained from grain.....	6.95	7.15
Beet spirit.....	6.90	7.15
Potato spirit (whiskey from distillation of potatoes).....	6.85	7.10
Potato whiskey, ten times rectified.....	.....	7.35

These results have been entirely confirmed by another series of researches, which lasted more than three years, and which pertained to chronic alcoholism, the subjects of the experiments being hogs. All these results may be summed up in this one sentence,—*the higher in the series the alcohol, the more toxic it is.*

All the spirits in common use contain variable proportions of the different alcohols of the series; but while wine spirit possesses but feeble quantities of propyl, butyl, amyl alcohols, as Ordonneau has shown, potato and grain spirit contain these higher alcohols in excess, and they can only be removed by successive rectifications.

Ordonneau, in an interesting work on the composition of distilled liquors, has brought to light this interesting fact, that the nature of

* Dujardin-Beaumetz and Audigé, "Experimental Researches on the Toxic Power of the Alcohols." Paris, 1886.

the spirit produced in a fermenting solution depends on the ferment employed. If the ferment is impure, there are generated iso-alcohols, while with a pure ferment you obtain the true alcohols. Despite the identity of formula which exists between the iso-alcohols and the alcohols properly so called, the toxicity of the former is much greater than that of the latter.

Manufacturers of spirits have of late found that certain amylaceous substances, and especially rice and maize, under the action of a pure ferment, such as that high malt yeast which we use in making galazyme, give origin to ethyl alcohols of almost absolute purity, not even needing rectification, so minute are the proportions of the more toxic alcohols (potato, butyl spirit, etc.).

Pure or absolute alcohol is only of interest chemically. Rectified spirit is alcohol with sixteen per cent. of water, sp. gr. .838. Proof spirit consists of an admixture, in nearly equal proportions, of alcohol and water, and the distilled liquors sold for ordinary consumption are intended to be of about this strength.

The following table shows the richness in alcohol of different commercial spirits :

	Alcohol.	
	By weight.	By measure.
British proof spirit contains.....	50	57
Commercial cognac "	50 to 54
Rum "	72 to 77
Gin "	50
Whiskey "	59
Rectified beet spirit "	94

Since the phylloxera has made such ravages with our vines, France, which, in its vine-growing departments, as Charentes, used to produce the best brandy in the world, has suffered such a falling off in the production of this spirit that one must to-day be a millionaire to be able to afford good brandy for his table ; nor are we even sure of obtaining good brandy by paying twenty francs per litre for it.

But the brandy made from wine has been replaced by beet and grain whiskey, to the great detriment of the consumer. By referring to the table which I have given you,* you will see that if in 1875 France produced 348,723 hectolitres of brandy, in 1879 the quantity was only 4929 hectolitres, and 13,073 in 1882. These figures show pitifully when placed by the side of the 2,000,000 hectolitres of alcohol which we consume in France.

By the side of these spirits we must place

the "liquors" of the retail shops and "*cafés*." The quality of these "liquors" depends on the kind of alcohol employed and the substance with which they are aromatized. Unfortunately, the flavoring ingredients introduced generally only serve to disguise the bad taste and bad quality of the alcohol used, and this is what happens in the case of low-priced liquors, and in particular of absinthe. As for the pretended stomachic and aperient substances with which the liquors of our drinking-saloons are "doctored," they have no healthy stimulant effect on the digestion, and all the bitter extracts, gentian, quassia, aloes, absinthe, etc., which, added to the whiskey or rum, constitute the basis of popular "bitters," have no favorable action whatever on the secretion of gastric juice, but rather retard and arrest it, as Tschelzoff, one of Prof. Botkin's clinical chiefs, has recently shown.† Those that think that they have derived benefit from them, in all likelihood have confounded the cramps of the stomach, which they may have experienced under the irritant action of these liquors, with the sensation of hunger.

I have finished this long enumeration of alcoholic beverages, and I shall conclude by saying a few words about the physiological action and digestibility of alcohol.

Alcohol is of itself an irritant, and, when applied to mucous membranes, it develops a sensation of heat and burning, which is the greater the more concentrated the alcohol. When introduced into the stomach, besides the symptoms of irritation, it occasions an exaggeration in the acidity of the gastric juice. The experiments of Charles Richet on Marcellin are very demonstrative of this fact.

In the normal state the acidity of Marcellin's gastric juice was represented by 1.3 gms. of hydrochloric acid per litre. During digestion the acidity rose to 1.7 gms. ; but as soon as an alcoholic stimulant was introduced the acidity went up to 2.7 gms., and even 4 gms. per litre.

This is a capital point in the physiology of alcohol as far as its influence on digestion is concerned, and this property is utilized to a certain extent in all countries, and especially in Normandy, where it is a common custom to "make a hole," as they call it, in the middle of a meal by drinking a small glass of

* Omitted from the translation.

† Tschelzoff, "On the Influence of Bitters on the Digestion and Assimilation of Albuminoid Matters" (*Centralblatt für die Medicinischen Wissenschaften*, 1886, No. 24).

brandy. In this way the acidity of the gastric juice is augmented, and the stomachal digestion is increased. From this fact there arises an important indication,—to give to patients affected with dyspepsia from want of secretion of gastric juice a small glass of liquor after their meals.

But it will not do to prolong this action of the alcohols, for little by little the pepsin-glands become worn out and cease their functions, to give place to the increased secretion of the mucous glands. All our alcoholic dyspeptics go through about the same history. There is, first of all, gastric irritation with pyrosis, resulting from the exaggerated acidity of the gastric juice, then these symptoms give place to gastrorrhœa, characterized by the petuitous vomiting and dyspepsia of drunkards.

Alcohol, when ingested, is absorbed by all parts of the digestive tube, but especially by the intestines. It is taken up by the radicles of the portal vein, and passes into the hepatic circulation, where its presence determines portal periphlebitis, the origin of the cirrhosis of drunkards. Then it enters the general circulation, to be eliminated by the lungs and kidneys, whether in the state of unchanged alcohol or in that of acetic acid and aldehyde.

Many hypotheses have been put forth as to the physiological action of the alcohols. It is one of the most interesting of medico-physiological questions, of which I can only sum up here the leading points.

All these hypotheses may be reduced to two. The first is the theory maintained since 1860 by Lallemand, Duroy, and Perrin, which affirms that alcohol is neither transformed nor destroyed in the organism, and that the total quantity being eliminated unchanged, it cannot be considered a food. The other theory is that supported by my regretted master, Bouchardat, who claims that alcohol undergoes combustion and transformation in the economy, and therefore acts the part of a food. This is the view which I hold, and which I have defended to the best of my ability the past two years before the Academy.

You put together, I have said, in the circulating blood two chemical bodies, the one alcohol, having a strong affinity for oxygen, the other hæmoglobin, ready to yield up its oxygen under the most feeble influence, that of an inert gas, for instance, and you pretend that no exchange takes place between these bodies. Exchanges do take place, and I have

demonstrated with my pupil, Jaillet, the transformation *in vitro* of alcohol into acetic acid under the influence of hæmoglobin. I believe, then, fully in the combustion of a part of the alcohol ingested, and this combustion takes place at the expense of the oxygen of the hæmoglobin of the blood-corpuscles.

This view, moreover, finds confirmation in the experiments of Bandot, Schallinas, Anstie, and Lauder Brunton, of Lussana, and Albertoni, all of whom have no doubt as to the combustion of a portion of the alcohol ingested.

So, then, to sum up my view as to the physiological action of alcohol, I should say that when introduced into the economy in non-toxic dose, a certain part of the alcohol is oxidized and is transformed into acetic acid, then into alkaline acetates, then into carbonates. Alcohol is, then, a food, but a waste-restraining food, which, instead of energizing the combustions, slows them, by robbing the blood-corpuscles of a certain quantity of oxygen. It is this action on the blood-corpuscles which explains to us the antithermic power of the alcohols, an action which attains its maximum of intensity when toxic doses of alcohol are administered. In such toxic cases the alcohol is no longer burned, but destroys the globules and dissolves the oxyhæmoglobin. Ordinarily, not all the oxygen ingested undergoes combustion. A part unchanged acts directly on the cerebro-spinal axis, and there determines phenomena of intoxication, of sleep, and of vaso-motor modifications, varying according to the quantity of alcohol ingested.

These three properties—alimentary, antithermic, and tonic—have made alcohol one of the most powerful agents of the antithermic treatment of disease, and I shall not here take your time in enumerating the numerous applications of alcoholic stimulants to medicine. I cannot do better than refer you for a vigorous handling of this whole subject to the thesis of fellowship of my former pupil, Prof. Grancher, "On the Tonic Medication," a thesis published in 1875. This finishes what I have to say about an agent which has a prominent place in hygienic therapeutics.

All the beverages considered in this lecture are taken at meal-time or between meals (the principal consumption is at meal-time), and the greater or less abundance ingested has a decided influence on the volume of the digestive tube. Dancel, basing himself on the fact that in veterinary practice one may augment or diminish at pleasure the dimensions of the

horse's stomach by augmenting or diminishing the quantity of water which the animal is allowed to drink, has also shown that it is the same with man; hence he would limit to half a pint the quantity of liquid which a corpulent person ought to take with his meal. Schweninger has gone further, and has suppressed all drinks from the dietary of obese patients, and he recommends that such persons shall not drink till two hours after meals. In the next lecture, when I come to the treatment of obesity, I shall take up this point again.

This abstinence from liquids, which has been described under the name of *the dry diet cure*, and which Fonssagrives calls *xerophagia*, has been also applied to the treatment of dilatation of the stomach. Hippocrates, Petronius, Asclepiades, and Muller had always pointed out the advantages of a dry diet in the case of serous effusions, and when there was an indication to dry up certain exaggerated secretions. This regimen has been revived in our time by Chomel in the treatment of what he improperly calls *the dyspepsia of liquids*, and by Huchard in combating dilatation of the stomach. In cases of gastrectasia, in fact, the allowance of liquids ingested augments the stomachal dilatation; hence there is every reason for restricting the quantity of drinks.

I have now concluded what I had to say concerning the principal elements of hygienic therapeutics, it remains for me to apply these data to the study of Dietetics; this is what I shall attempt to do in the next lecture.

A CONTRIBUTION TO OUR KNOWLEDGE OF FEVER, AND THE AGENTS WHICH PRODUCE OR ARREST IT.

BY DRs. H. C. WOOD, E. T. REICHERT, AND HOBART A. HARE.

(Continued from page 678.)

PART III.—ANTIPYRETICS.

QUININE.

THE first drug having alleged antiperiodic properties which we attempted to study was quinine. It is so notorious that this alkaloid has, unless in poisonous doses, no effect upon the temperature of the normal animal, that we do not think it necessary to record our experiments upon such animals in detail; if the bodily temperatures recorded in the table on page 734 are consulted, they will be found to confirm the general belief

that quinine has no positive constant action upon the bodily temperature in health.

The following experiments were made in order to determine the effect of quinine upon the fever produced by injection of pepsin.

Experiment 35.—

Time. 12.30. Injected 6 grammes of concentrated pepsin into jugular vein of dog; ten minutes later injected $\frac{1}{2}$ gramme of quinine.

Time.	Rec. temp.	Remarks.
1.20	101.4°	
4.20	105.3°	

Experiment 36.—April 24, 1884; dog; weight, 14.6 pounds.

Time.	Rec. temp.	Remarks.
11.25	102.8°	Injected 4 grms. of concentrated pepsin.
3.30	106.8°	Injected 1 gramme of quinine.
4.35	105.6°	
5.52	103.7°	

Experiment 37.—Dog; weight, 9 pounds.

Time.	Rec. temp.	Remarks.
11.30	102°	
12.	.....	Injected 2 grms. concentrated pepsin. Dog etherized.
12.20	101.2°	
3.15	106°	
4.50	104.2°	Injected 1 grm. quinine hypodermically.
6.05	104.2°	

Experiment 38.—Dog; weight, 26 pounds.

Time.	Rec. temp.	Remarks.
11.35	103.5°	5 grammes pepsin.
12.05	102.2°	1 gramme quinine hypodermically.
2.10	102.4°	

Experiment 39.—Dog; weight, 6.5 pounds.

Time.	Rec. temp.	Remarks.
11.30	102.8°	
3.15	103.2°	Injected 1 gramme pepsin.
3.20	.....	Injected hypodermically 0.5 gramme quinine.
3.30	102.7°	
5.00	103.4°	
7.00	103.1°	

These experiments, in accord with those to be detailed hereafter, indicate that quinine has a distinct influence in abating the fever produced by the injection of pepsin, but that this influence is not dominant and is not shown at all unless the dose of quinine used be large. The alkaloid appears in the dog as in the man to be an antipyretic, reducing temperature when circumstances favor it, but unable to assert itself at all times.

The next series of experiments were directed towards determining if possible the action of quinine upon heat production and heat dissipation.

Experiment 40.—Dog; weight, 25.50 pounds.

Time.	Rec. temp.	Cal. temp.
2.52	103.6°	66.80°
3.52	104.2°	69.01°

4.00 Injected 15 grains of quinine. 2.21°

Time.	Rec. temp.	Cal. temp.
4.20	104.2°	68.45°
5.20	104.3°	70.04°

1.59°

RESULTS.

Hourly dissipation of heat.....	269.62
Hourly production of heat.....	281.095
Hourly dissipation of heat.....	193.89
Hourly production of heat.....	195.89

SUMMARY.

Hourly heat dissipation before quinine.....	269.62
Hourly heat dissipation after quinine.....	193.89
Loss of heat dissipation after quinine....	75.73
Heat production before quinine.....	281.095
Heat production after quinine.....	195.89
Loss of heat production after quinine....	85.105

Experiment 41.—Same dog as last; weight, 25.50 pounds.

Time.	Rec. temp.	Box temp.
12.40	103.4°	67.28°
2.40	103.4°	69.71°

2.43°

2.57 37 grains of quinine.

Time.	Rec. temp.	Cal. temp.
3.37	104.1°	68.24°
5.37	104.1°	70.7°

2.46°

RESULTS.

Hourly dissipation of heat.....	148.23
Hourly production of heat.....	148.23
Hourly dissipation of heat.....	150.06
Hourly production of heat.....	151.01

SUMMARY.

Hourly heat dissipation before quinine.....	148.23
Hourly heat dissipation after quinine.....	150.06
Hourly gain in heat dissipation.....	1.83
Hourly heat production before quinine.....	148.23
Hourly heat production after quinine.....	151.01
Hourly gain in heat production.....	2.78

Experiment 42.—Scotch terrier; weight, 15.25 pounds.

Time.	Rec. temp.	Box temp.	Air temp.	Tube temp.
12.25	104.5°	65.66°	69.80°	68.27°
12.50	.....	.....	71.12°	68°
1.10	.....	.....	71.12°	68.18°
1.25	.....	.....	71.42°	68.45°
1.40	102.5°	66.92°		

1.26°

2 P.M. 1 gramme of quinia sulph. by mouth.

Time.	Rec. temp.	Box temp.	Air temp.	Tube temp.
3.08	103.6°	66.92°	73°	70.34°
3.30	.....	.....	72.42°	69.54°
4.05	.....	.....	70.34°	69.86°
4.23	102.8°	68.06°		

1.14°

RESULTS.

Hourly dissipation of heat.....	122.98
Hourly production of heat.....	104.68

Hourly dissipation of heat.....	111.26
Hourly production of heat.....	103.94

SUMMARY.

Hourly heat dissipation before quinine.....	122.98
Hourly heat dissipation after quinine.....	111.26
Loss of heat dissipation.....	11.72
Hourly heat production before quinine.....	104.68
Hourly heat production after quinine.....	103.94
Loss of heat production.....	0.74

Experiment 43.—Dog; weight, 15 1/4 pounds.

Time.	Rec. temp.	Box temp.
11.	103.9°	67.37°
1.	103.5°	69.08°

1.71°

1.30 2 grammes of quinine by the mouth; 1.45, vomiting freely; 2.30, 2 grammes quinine hypodermically; 3.42, rec. temp. 103.4°:

Time.	Rec. temp.	Box temp.
3.50	103.4°	69.08°
5.20	102.4°	70.34°

1.26°

RESULTS.

Hourly dissipation of heat.....	104.31
Hourly production of heat.....	102.123

Hourly dissipation of heat.....	102.48
Hourly production of heat.....	94.854

SUMMARY.

Heat dissipation before quinine.....	104.31
Heat dissipation after quinine.....	102.48
Loss of heat dissipation.....	1.83
Heat production before quinine.....	102.123
Heat production after quinine.....	94.854
Loss of heat production.....	7.269

Experiment 44.—Rabbit; weight, 3 pounds 7 ounces.

Time.	Rec. temp.	Box temp.
1.05	102°	66.08°
2.50	102.54°	66.48°
		0.40°

0.5 gramme of quinine sulph. by stomach.

Time.	Rec. temp.	Box temp.
3.35	101.85°	66.74°
5.20	101.85°	67.30°
		0.56°

5.25 Rectal temperature 101.85°.

RESULTS.

Hourly dissipation of heat.....	17.2730
Hourly production of heat.....	17.7238
Hourly dissipation of heat.....	24.1824
Hourly production of heat.....	24.1824

SUMMARY.

Heat dissipation before quinine.....	17.273
Heat dissipation after quinine.....	24.182
Gain of heat dissipation.....	6.909
Heat production before quinine.....	17.72
Heat production after quinine.....	24.1824
Gain of heat production.....	6.9094

Experiment 45.—Dog; weight, 33 pounds.

Time.	Rec. temp.	Cal. temp.
12.40	103°	62.12°
1.40	102.8°	63.68°
		1.56°

2. 1 gramme quinine sulphate by mouth.

Time.	Rec. temp.	Cal. temp.
2.48	102.4°	64.17°
3.48	101.8°	65.25°

RESULTS.

Hourly dissipation of heat.....	190.32
Hourly production of heat.....	185.37
Hourly dissipation of heat.....	131.76
Hourly production of heat.....	116.91

SUMMARY.

Heat dissipation before quinine.....	190.32
Heat dissipation of heat after quinine.....	131.76
Loss of heat dissipation.....	58.56
Heat production before quinine.....	185.37
Heat production after quinine.....	116.91
Loss of heat production.....	68.46

Experiment 46.—Large dog; weight, 33 pounds.

Time.	Rec. temp.	Cal. temp.
12.25	102.4°	61.52°
2.25	101.7°	64.35°
		2.83°

2.45 Gave 3.75 grms. quinine sulph. by mouth.

Time.	Rec. temp.	Cal. temp.
3.30	102.8°	64.31°
5.30	102.1°	67.51°
		3.20°

Dog vomited in the box.

RESULTS.

Hourly dissipation of bodily heat.....	177.63
Hourly production of bodily heat.....	168.97
Hourly dissipation of bodily heat.....	195.20
Hourly production of bodily heat.....	186.54

SUMMARY.

Heat dissipation before quinine.....	177.63
Heat dissipation after quinine.....	195.20
Gain of heat dissipation.....	17.57
Heat production before quinine.....	168.97
Heat production after quinine.....	186.54
Gain of heat production.....	17.57

Experiment 47.—

Time.	Rec. temp.	Cal. temp.
12.18	103.3°	61.52°
1.48	103.8°	63.14°
	111.00°	1.62°

2.10 1.5 grammes quinine by stomach.

2.35 Rec. temp. 103°.

Time.	Rec. temp.	Cal. temp.
2.45	103°	63.32°
4.15	103.3°	65.32°
		2.00°

RESULTS.

Hourly production of bodily heat.....	137.57
Hourly dissipation of bodily heat.....	131.76
Hourly production of bodily heat.....	164.995
Hourly dissipation of bodily heat.....	162.670

SUMMARY.

Heat dissipation before quinine.....	131.76
Heat dissipation after quinine.....	162.67
Gain of heat dissipation after quinine...	30.91
Heat production before quinine.....	137.570
Heat production after quinine.....	164.995
Gain of heat production after quinine...	27.235

Experiment 48.—Dog; weight, 17 pounds.

Time.	Rec. temp.	Cal. temp.
12.	102.2°	65.66°
1.30	101.2°	66.68°
		1.02°

1.45 7 grains quinine by mouth.

Time.	Rec. temp.	Cal. temp.
3.07	101.1°	66.80°
4.37	101.5°	68.06°
		1.26°

RESULTS.

Hourly dissipation of heat.....	82.96
Hourly production of heat.....	74.76

Hourly dissipation of heat.....	102.48
Hourly production of heat.....	107.58

SUMMARY.

Dissipation of heat before quinine	82.96
Dissipation of heat after quinine.....	102.48

Gain in heat dissipation after quinine..... 19.52

Heat production before quinine	74.76
Heat production after quinine.....	107.58

Gain in heat production after quinine..... 32.82

Experiment 49.—Rabbit ; weight, 3 pounds 4 ounces.

Time.	Rec. temp.	Cal. temp.
12.25	102°	64.76°
1.55	102°	65.22°
		0.56°

2.05 About 2 grains of quinine by mouth.

Time.	Rec. temp.	Cal. temp.
3.22	101.9°	65.75°
4.52	102.3°	66.29°
		0.54°

RESULTS.

Hourly dissipation of heat.....	28.2128
Hourly production of heat.....	27.2052

Hourly dissipation of heat	27.1384
Hourly production of heat.....	28.1952

SUMMARY.

Hourly dissipation before quinine	28.2128
Hourly dissipation after quinine.....	27.1384

Loss of dissipation of heat after quinine. 1.0744

Heat production before quinine.....	27.2052
Heat production after quinine.....	28.1952

Gain in heat production after quinine.. 0.99

Drs. H. C. Wood and E. T. Reichert published in the *Journal of Physiology* a series of calorimetrical experiments. The results obtained by them in these experiments are incorporated with those arrived at in the present research in the following table. Experiments 1 to 7 inclusive are taken from the *Journal of Physiology*.

No. of experiment.	Time of each calorimetrical observation.	Weight of animal.	Drug.	Dose.	Hourly dissipation of heat.				Hourly production of heat.			
					Normal.	After drug.	Increase.	Per cent. increase.	Normal.	After drug.	Increase.	Per cent. increase.
1	Hours. 1	Pounds. 17.25	Quinine sulphate.	Grains. 10	108.9306	148.7805	39.8499	36	108.9306	148.7805	39.8499	36
2	1	14.25	.....	14	54.0009	98.4198	44.4189	82	73.2384	103.7635	30.5251	42
3	1	13.12	.....	13	83.1434	106.0934	22.95	27	75.2714	87.9857	12.7143	17
4	1	14.25	.....	14	70.2497	102.7485	32.49	46	80.9372	94.1985	13.2613	16
5	1 1/4	18	.....	15	124.718	239.4049	114.6869	92	130.5230	242.5099	111.9869	86
6	1	13.12	.....	13	77.8691	132.6034	54.7343	70	69.9941	109.9628	39.9687	57
7	1	14.25	.....	14	55.2348	94.5426	39.2078	71	64.8535	98.0694	33.2159	51
41	2	25.50	.....	37	148.23	150.06	1.83	1.5	148.23	151.01	2.78	1.84
44	1 1/4	3.5	.....	7.71	17.273	24.182	6.909	40	17.72	24.182	6.909	39
46	2	33	.....	57.86	177.63	195.20	17.57	10	168.97	186.54	17.57	10.4
47	1 1/2	23.25	.....	23.145	131.76	162.67	30.91	23	137.57	164.99	27.235	19
48	1 1/2	17	.....	7	82.96	102.48	19.52	23	74.76	107.58	32.82	45
Average.....					43.5				31.5			

No. of experiment.	Time of each calorimetrical observation.	Weight of animal.	Drug.	Dose.	Hourly dissipation of heat.				Hourly production of heat.			
					Normal.	After drug.	Loss.	Per cent. loss.	Normal.	After drug.	Loss.	Per cent. loss.
40	Hours. 1	Pounds. 25.50	Quinine sulphate.	Grains. 15	269.62	193.89	75.73	28.0	281.095	195.89	85.105	30
42	1 1/4	15.25	.....	15.43	122.98	111.26	11.72	1.9	104.68	103.94	0.74	0.7
43	2	15.25	.....	30.868	104.31	102.48	1.83	1.82	102.123	94.854	7.269	7
45	1	33	.....	15.43	190.32	131.76	58.56	31.0	185.37	116.91	68.46	36
49	1 1/2	3.3	.....	2	28.2128	27.1384	1.0744	3.8	27.2052	28.1952	0.99	3.7
Average.....					13.3				15.5			

An examination of the experiments and of the tables in which they are summarized will show that the results which we have obtained by the use of quinine given are not concordant. In twelve experiments there was a decided increase in both the production and dissipation of animal heat. In two experiments both functions were decidedly lessened; in one there was a slight diminution, and in two there was no distinct effect. The discrepancies are not to be explained by the varying size of doses, because contrary results were reached with doses of practically equal proportionate size.

The difficulties which attend the administration of quinine are excessive. When given by the mouth, it is very apt to vomit the animal, and if it be used hypodermically, it produces an amount of local irritation which has an immediate effect upon the heat functions. Further, our experience has also shown that there is in the uninjured animal from hour to hour a curious and at present not altogether explicable variation in the production and dissipation of animal heat, and that in order for any drug or operative procedure to produce an apparently uniform result, it is essential that its influence be overwhelming. In the present case we can only consider that the ordinary average effect of quinine given to the normal dog in the method we have used it is to produce an increase both of production and also of dissipation of animal heat. The two functions are so connected with one another that in the normal animal they must perpetually react. Anything which increases heat dissipation primarily, secondarily will increase heat production, by virtue of the fact that whenever bodily temperature is lowered by excessive loss of heat the attempt is made to maintain the bodily temperature by an excessive production of heat. Without more light than we have upon the problem, it seems to us impossible to decide whether the heat production or the heat dissipation is the function primarily affected by quinine.

We have made a few experiments upon the action of quinine on the heat functions of animals which were under the influence of pepsin. The quinine was given after the pepsin fever had commenced, but, as it is uncertain what the undisturbed course of the fever would have been had the quinine not been given, it is very difficult to judge of the exact bearing and value of our results. For this reason we soon abandoned the method of experimenting, but the results we did achieve

seem to us to accord with those obtained by a better plan.

In the following experiments the dog was first given pepsin, and after the fever had set in quinine, or else the quinine and pepsin were given simultaneously.

Experiment 50.—Dog; weight, 9 pounds.

Time.	Remarks.
11.30	Rec. temp. 102° F. Etherized; jugular exposed.
12 noon	2 grammes concentrated pepsin injected into jugular vein.
12.20	Rec. temp. 101.2° F. Dog evidently feels cold; tries hard to get to fire.

Time.	Rec. temp.	Cal. temp.
3.38	106°	60.55°
4.38	104.2°	61.7°
		1.15°
4.50	1 gramme quinine sulphate hypodermically.	

Time.	Rec. temp.	Cal. temp.
5.5	104.2°	61.6°
6.5	104.2°	62.6°
		1.0°

RESULTS.

Before quinine.	Hourly dissipation of heat.....	86.905
	Hourly production of heat.....	74.75
After quinine.	Heat dissipation.....	75.57
	Heat production.....	75.57

SUMMARY.

	Heat dissipation.	Heat production.
Before quinine.....	86.905	74.75
After quinine.....	75.57	75.57

Experiment 51.—Dog; weight, 14.6 pounds.

Time.	
11.25	4 grammes of concentrated pepsin.

Time.	Rec. temp.	Cal. temp.
2.05	105.4°	61.65°
3.05	106.8°	62.42°
		0.77°
3.20	1 gramme quinine hypodermically.	

Time.	Rec. temp.	Cal. temp.
3.35	106.8°	62.87°
4.35	105.6°	63.64°
		0.77°

Time.	Rec. temp.	Cal. temp.
4.52	105.6°	63.68°
5.52	103.7°	64.54°
		0.86°

RESULTS.

Before quinine.	Hourly dissipation of heat.....	93.94
	Hourly production of heat.....	109.27
After quinine.	Hourly dissipation of heat.....	93.94
	Hourly production of heat.....	82.20
	Hourly dissipation of heat.....	104.92
	Hourly production of heat.....	84.48

Experiment 52.—Dog ; weight, 6½ pounds.

Time.	Rec. temp.	Cal. temp.
11.42	102.8°	62.14°
2.12	103.8°	64.55°
		2.41°

3.15 1 gramme concentrated pepsin into jugular and 0.5 gramme quinine hypodermically.

Time.	Rec. temp.	Cal. temp.
3.38	102.7°	65.33°
5.08	103.4°	66.92°
		1.59°

Time.	Rec. temp.	Cal. temp.
5.40	103.4°	67.64°
7.10	103.1°	69.03°
		1.39°

Dog killed by pithing.

RESULTS.

Hourly dissipation of heat.....	80.0975
Hourly production of heat.....	81.8038
Hourly dissipation of heat.....	72.8503
Hourly production of heat.....	73.5003
Hourly dissipation of heat.....	70.0282
Hourly production of heat.....	69.2970

Experiment 53.—Dog ; weight, 26 pounds.

Time.	Rec. temp.	Cal. temp.
8.40	103.4°	63.78°
10.55	103.5°	66.30°
		2.62°

11.35 5 grammes concentrated pepsin into jugular. Injected hypodermically 1 gramme of quinine.

Time.	Rec. temp.	Cal. temp.
12.10	102.2°	65.38°
2.10	100.6°	67.12°
		1.74°

Time.	Rec. temp.	Cal. temp.
2.35	100.6°	66.92°
4.35	102.4°	68.97°

RESULTS.

Hourly dissipation of heat.....	142.0622
Hourly production of heat.....	149.154
Hourly dissipation of heat.....	106.14
Hourly production of heat.....	93.66
Hourly dissipation of heat.....	125.5
Hourly production of heat.....	139.09

An examination of these experiments, as tabulated on page 737, will show that the following comments upon them are correct. In the first, Experiment 50, the temperature of the animal had been raised by means of pepsin from 102° to 106° when the first attempt was made to measure the heat produc-

tion and heat dissipation for an hour. As it turned out, the animal was just at the maximum of the fever, so that the temperature fell spontaneously nearly two degrees during the hour in which the dog was in the calorimeter. The quinine was then given, but it failed to have any effect upon the temperature, which in the subsequent hour remained constant. There was, however, a decrease in the production of animal heat so slight as to have no significance with a pronounced decrease of heat dissipation. We do not think that any conclusion can be drawn from this experiment.

In the second experiment (Experiment 51) the heat dissipation and production were first studied after the fever had been fully formed, whilst the temperature was still rising ; the quinine was then given, and studies made of the thermic functions during the steady fall of temperature which followed. In both the periods examined the fall of temperature was undoubtedly the result of diminished heat production with, in the last period, marked increase of heat dissipation : if these phenomena were produced by the quinine, and were not simply spontaneous phenomena of the fever at the time when it was naturally abating, they would indicate that quinine reduces the bodily temperature by decreasing the bodily production of heat, and also increasing its dissipation. It is plain that in such case the alteration in one function is not the cause of the change of the other function, for, if it were so, diminished heat production should be accompanied by diminished heat dissipation, or else an increased heat dissipation by a decreased heat production.

In Experiment 53 the pepsin and quinine were given hypodermically, and the result was a very marked fall of the temperature, followed by a partial recovery. The fall of temperature was chiefly the result of a decreased heat production, which was only partially compensated by a parallel, but less pronounced decrease of the heat dissipation. The fall of heat production must have been primary, because it was so much larger than the lessening of heat dissipation.

It will be seen that the three experiments which we have just discussed agree in indicating that quinine in pepsin peptone fever lowers the bodily temperature by decreasing the production of animal heat. The value of the evidence may be variously estimated, but certainly the last two experiments are of some importance as evidence, although they are, of course, not sufficient to establish any theory

Experiments.	Time.	Weight.	Drug.	Temperature.	Hourly production of heat.				Hourly dissipation of heat.				Remarks.
					Normal.	After injection.	Increase.	Decrease.	Normal.	After injection.	Increase.	Decrease.	
50	3.38 to 4.38 P.M. (1 hour)..... 5.5 to 6.5 P.M. (1 hour).....	9 pounds.	pepsin 1 gram, quin. hypo. 12 M. 4.50 P.M.	106° to 104.2° 104°	86.905	75.57 .....	..... .....	10.335	74.75	75.57	0.82 .....	..... .....	Recovered; mean did not die in twenty-four hours.
51	2.05 to 3.05 P.M. (2 hours)..... 3.35 to 4.35 P.M. (1 hour)..... 4.52 to 5.52 P.M. (1 hour).....	14.6 pounds.	4 grms. pepsin 11.35 A.M. 1 gram. quin. 3.20 P.M.	105.4° to 106.8° 106.8° to 105.6° 105.6° to 103.7°	93.94	93.94 104.92	..... ..... 10.98	0.03	109.27	82.20 84.48	..... ..... .....	27.07 24.79	Recovered.
52	11.42 to 2.12 P.M. (1½ hours)..... 3.38 to 5.08 P.M. (1½ hours)..... 5.40 to 7.10 P.M. (1½ hours).....	6½ pounds.	1 gram. con- centrated pep- sin 3.15 P.M. 0.5 gram. quin. hypo. 3.15 P.M.	102.8° to 103.2° 102.7° to 103.4° 103.4° to 103.1°	80.075	72.8503 70.0882	..... ..... .....	..... 7.2472 2.8221	81.8038	73.5003 69.2970	..... ..... .....	8.3035 12.5068	Killed by pithing.
53	8.40 to 10.55 A.M. (2¼ hours)..... 12.10 to 2.10 P.M. (2 hours)..... 2.35 to 4.35 P.M. (2 hours).....	26 pounds.	5 grms. pepsin 11.35 P.M. 1 gram. quin. 12.05 P.M.	103.4° to 103.5° 102.2° to 106° 100.6° to 102.4°	142.062	106.14 125.5	..... ..... .....	35.922 16.562	149.154	93.66 139.09	..... ..... .....	55.494 10.064	Dog used in Experiment 25. Recovered.

or generalization. After having performed these various experiments, it became plain to us that the only satisfactory method of studying the action of quinine upon peptone fever would be to produce fever in a dog by the use of pepsin in fixed amount, and, after the animal had recovered, to administer the same amount of pepsin along with quinine, and then compare the two results. Of course such experimentation is very laborious, involving two whole days for each experiment.

Experiment 54.—Dog ; weight, 6½ pounds.

PART I.*

PEPSIN ALONE.

Time.	Rec. temp.	Cal. temp.
9.00	103.4°	62.88°
11.00	102.4°	64.78°
		1.90°

Time.	Rec. temp.	Cal. temp.
11.50	Injected 1 gramme of pepsin.	
12.25	102.4°	64.66°
2.25	105.4°	66.4°
		1.86°

Time.	Rec. temp.	Cal. temp.
2.50	105.4°	66.45°
4.50	103.6°	68.36°
		1.91°

RESULTS.

Hourly dissipation of heat.....	71.78
Hourly production of heat.....	69.33
Hourly dissipation of heat.....	70.2801
Hourly production of heat.....	77.57
Hourly dissipation of heat.....	72.1693
Hourly production of heat.....	67.7593

PART II.

PEPSIN AND QUININE.

Time.	Rec. temp.	Cal. temp.
11.42	102.8°	62.14°
2.12	103.2°	64.55°
		2.41

3.15 1 gramme concentrated pepsin.
3.20 0.5 gramme quinine hypodermically.

Time.	Rec. temp.	Cal. temp.
3.38	102.7°	65.33°
5.08	103.4°	66.92°
		1.59°

Time.	Rec. temp.	Cal. temp.
5.40	103.4°	67.64°
7.10	103.1°	69.03°
		1.39°

Dog killed by pithing.

* Part I. is Experiment 32.

RESULTS.

Hourly dissipation of heat.....	72.8503
Hourly production of heat.....	73.5003
Hourly dissipation of heat.....	80.0975
Hourly production of heat.....	81.8038
Hourly dissipation of heat.....	70.0282
Hourly production of heat.....	69.2970

Experiment 55.—Dog ; weight, 20 pounds.

PART I.

PEPSIN ALONE.

Time.	Rec. temp.	Box temp.
11.20	102.80°	69.85°
12.20	.....	70.30°
1.20	102.70°	70.80°
		0.10°
		0.95°

1.45 12 grms. of boiled pepsin into jugular.
1.50 Injection ended.

Time.	Rec. temp.	Box temp.
2.	103°	70.35°
3.	104.60°	70.85°
		0.40°
		0.50°

Time.	Rec. temp.	Box temp.
3.15	104.60°	70.82°
4.15	71.70°	.....
5.15	106.60°	72.45°
		2.00°
		1.63°

RESULTS.

Hourly dissipation of heat before pepsin.....	57.950
Hourly production of heat before pepsin.....	57.200
Hourly dissipation of heat after pepsin.....	61.000
Hourly production of heat after pepsin.....	69.000
Hourly dissipation of heat.....	99.430
Hourly production of heat.....	114.430

PART II.

QUININE AND PEPSIN.

Time.	Rec. temp.	Box temp.
11.	105.8°	62.30°
12.	.....	63°
1.	105.8°	63.65°
		1.35°

1.10 Injected 12 grms. boiled pepsin into jugular ; also 20 grs. of the bisulphate of quinine under the skin.

1.15 Injections ended.

Time.	Rec. temp.	Box temp.
1.20	103.8°	63.50°
2.20	105.5°	64°
		1 7°
		0.50°

Time.	Rec. temp.	Box temp.
2.25	105.5°	64°
3.25	.....	64.65°
4.25	102.5°	65.40°
		3°
		1.40°

RESULTS.

Hourly dissipation of heat.....	82.350
Hourly production of heat.....	82.350
Hourly dissipation of heat.....	61.000
Hourly production of heat.....	86.500
Hourly dissipation of heat.....	85.400
Hourly production of heat.....	62.900

Experiment 56.—Dog ; weight, 16 pounds.

PART I.

Time.	Rec. temp.	Box temp.
10.30	103°	66.20°
11.30	.....	66.50°
12.30	103.8°	66.55°
	0.8°	0.35°

12.40 12 grms. of boiled pepsin into jugular.
12.45 Injection ended.

Time.	Rec. temp.	Box temp.
1.35	103.3°	67.20°
4.35	106.5°	68.40°
	3.2°	1.20°

RESULTS.

Hourly dissipation of heat before pepsin.....	21.350
Hourly production of heat before pepsin.....	26.150
Hourly dissipation of heat after pepsin.....	48.80
Hourly production of heat after pepsin.....	61.60

PART II.

Time.	Rec. temp.	Box temp.
10.20	103.5°	58°
11.20	.....	58.70°
12.20	104.5°	59.56°
	1°	1.50°

12.35 Injected 12 grammes of boiled pepsin into jugular.

12.35 Injection ended.

12.40 Quinine bisulphate hypodermically 13 grs.

Time.	Rec. temp.	Box temp.	T. air.
1.10	105.5°	59.75°	62°
2.10	.....	.....	.....
3.10	.....	.....	.....
4.10	102.4°	62.25°	70.2°
	3.1°	2.50°	

RESULTS.

Hourly dissipation of bodily heat..	91.500
Hourly production of heat.....	97.500
Hourly dissipation of heat.....	101.67
Hourly production of heat.....	89.27

The results of these experiments are summarized in the following two tables. The first of these tables represents the heat dissipation of the days, giving at the same time the rectal temperature for each period, and thereby enabling the examiner to see at a glance the whole matter. The second table is similarly arranged for heat production.

No. 1.—Fever Experiments with Pepsin and Quinine. Heat Dissipation.

First day, no drug but pepsin.				Second day, quinine and pepsin.		
Exp.	Before pepsin.	First period after pepsin.	Second period after pepsin.	Before drugs.	First period after drugs.	Second period after drugs.
55	R. T. 102.8°-102.7° D. 57.950	R. T. 103.0°-104.6° D. 61.000	R. T. 104.6°-106.6° D. 99.430	R. T. 105.8°-105.8° D. 82.350	R. T. 103.8°-105.5° D. 61.000	R. T. 105.5°-102.5° D. 85.400
56	R. T. 103°-103.8° D. 21.350	R. T. 103.3°-106.5° D. 48.800		R. T. 103.5°-104.5° D. 91.500	R. T. 105.5°-102.4° D. 101.670	
54	R. T. 103.4°-102.4° D. 71.780	R. T. 102.4°-105.4° D. 70.2801	R. T. 105.4°-103.6° D. 72.1693	R. T. 102.8°-103.2° D. 72.8503	R. T. 102.7°-103.4° D. 80.0975	R. T. 103.4°-103.1° D. 70.0282

No. 2.—Fever Experiments with Pepsin and Quinine. Heat Production.

First day, no drug but pepsin.				Second day, quinine and pepsin.		
Exp.	Before pepsin.	First period after pepsin.	Second period after pepsin.	Before drugs.	First period after drugs.	Second period after drugs.
55	R. T. 102.8°-102.7° P. 57.200	R. T. 103.0°-104.6° P. 69.000	R. T. 104.6°-106.6° P. 114.430	R. T. 105.8°-105.8° P. 82.350	R. T. 103.8°-105.5° P. 86.500	R. T. 105.5°-102.5° P. 62.900
56	R. T. 103°-103.8° P. 26.150	R. T. 103.3°-106.5° P. 61.600		R. T. 103.5°-104.5° P. 97.500	R. T. 105.5°-102.4° P. 89.270	
54	R. T. 103.4°-102.4° P. 69.33	R. T. 102.4°-105.4° P. 77.57	R. T. 105.4°-103.6° P. 67.759	R. T. 102.8°-103.2° P. 73.5003	R. T. 102.7°-103.4° P. 81.8038	R. T. 103.4°-103.1° P. 69.2970

In order to facilitate the understanding of these tables, which are necessarily somewhat complicated, we have prepared two small tables in which the final results are placed in juxtaposition for comparison. In the first table, heat dissipation is considered. The first column gives the number of the experiment; the second and third columns are devoted to the first day,—*i.e.*, the day in which pepsin was alone used; absolute increase and the percentage of increase of heat dissipation in the first and second periods after the injection of the pepsin being placed in their respective columns; or, as in the case of Experiment 2, the absolute increase and the percentage of increase in the only period studied after the injection of the pepsin is given in each column. The last two columns of the table represent the second day, in which pepsin and quinine were both administered.

A table of heat production has also been prepared for these experiments in a manner similar to that just explained.

Perhaps these tables will be most easily understood by reading one of them across. For this purpose let us take the table of heat production and read Experiment 55, as follows: The first period after the injection of the pepsin alone, the heat production as compared with that before the giving of the pepsin was increased 11.8 units per hour, or seventeen per cent. In the second calorimetric period during the pepsin peptone fever, the production of heat was increased absolutely 57.2 units, or fifty per cent. On the second day after the simultaneous administration of pepsin and quinine the heat production, as compared with that before the administration of the drugs, was increased in the first calorimetric period absolutely 4.15 units, or 4.5 per cent. In the second period it was diminished absolutely 20.45 units, or twenty-four per cent.

In examining these tables it will be found that in regard to heat dissipation the results are not absolutely concordant, but still agree

Table of Percentages, etc., in Pepsin and Quinine Experiments. Heat Dissipation.

No. of Exp.	First day, pepsin alone.				Second day, pepsin and quinine.			
	First period after pepsin.		Second period after pepsin.		First period after pepsin and quinine.		Second period after pepsin and quinine.	
	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.
55	+ 3.050	+ 5	+ 41.480	+ 41	— 21.350	— 26	+ 3.050	+ 3½
56	+ 27.450*	+ 56	.....	.....	+ 10.170†	+ 10	.....	.....
54	— 1.4999	— 2	+ 0.389	+ ½	+ 7.2472	+ 9	— 2.832	— 4

* Dog in calorimeter for three hours without interruption.

† Dog in calorimeter for three hours without interruption.

Table of Percentages, etc., in Pepsin and Quinine Experiments. Heat Production.

No. of Exp.	First day, pepsin alone.				Second day, pepsin and quinine.			
	First period after pepsin.		Second period after pepsin.		First period after pepsin and quinine.		Second period after pepsin and quinine.	
	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.
55	+ 11.800	+ 17	+ 57.230	+ 50	+ 4.150	+ 4½	— 20.450	— 24
56	+ 35.450*	+ 56	.....	.....	— 8.230†	— 8½	.....	.....
54	+ 6.25	+ 8	— 1.61	— 2	+ 8.3035	+ 11	— 4.2003	— 5

* Dog in calorimeter for three hours without interruption.

† Dog in calorimeter for three hours without interruption.

very closely. In Experiments 55 and 56 both the amount and the percentage of heat dissipation after the use of pepsin and quinine was

very distinctly less than after the administration of the pepsin alone. In the third experiment there was a slight absolute and percent-

age increase of heat dissipation during the first calorimetric period after the exhibition of the pepsin and quinine as compared with the corresponding period of the pepsin-day. But during the last calorimetric periods of the two days the dissipation was greatly less after the pepsin and quinine. The experiment taken as a whole agrees with the others. The three experiments therefore show that the addition of quinine to the pepsin causes a distinct lessening of the heat dissipation.

In regard to heat production the results achieved were similar to those obtained by heat dissipation. If the whole term of the experiments be considered in each of the three experiments, heat production was distinctly reduced by the quinine. In the third experiment, however, during the first calorimetric period after the pepsin and quinine, the increase of heat production was slightly greater than that which occurred in the corresponding period after the pepsin alone.

These experiments are in accord with those which we have previously detailed in regard to the action of the quinine in the pepsin peptone fever of dogs. We do not think that our results are sufficient to positively determine whether the heat production or the heat dissipation is the function which is primarily influenced.

In the large doses in which quinine was employed in these experiments it is well known to produce marked depression of the circulation. We have attempted to make experiments to determine, if possible, the relations between this depression of circulation and the effect of the quinine upon the bodily temperature of the fevered dog. In order to do this it seemed essential that the quinine should be injected directly into the venous circulation, as otherwise it would be necessary to wait for an hour or so for the absorption of the quinine with the animals connected with the kymographion, and not under the influence of any narcotics. In every experiment in which we have practised the intravenous injection the quinine has produced death in a few moments by its depressing cardiac influence, although the solution of the drug was well diluted, and thrown into the vein very slowly and with great caution. We have, therefore, been baffled in our attempt to study the relation between the actions of the drug upon thermogenesis and upon the circulation. We have not pushed this subject as far as we otherwise would have done, because we believe that it is an assured fact that there is a depression of the circula-

tion at the period when the bodily temperature is depressed. Whether the influence of the quinine upon the temperature can be produced by doses so small as not to affect the circulation remains uncertain, and it is still more uncertain whether the influence of the quinine upon the fever temperature is or is not due to its action upon the circulation, but we are inclined to believe in the independence of the two actions.

Quinine influences the nervous system in a manner which is, at present, mysterious; leaving out of sight the question of its antimalarial effects, its power of restoring failing uterine contractions in parturition, with its lack of power in originating such contraction, is at present inexplicable. The best explanation we can at present give is, that quinine seems in some way to stimulate or support the nervous centres against certain morbid agents and certain conditions of exhaustion, and that the uterine contractions are restored by the power of the uterine nervous centres being in this way recuperated. It is possible that the influence of quinine in fever is of similar character, or, in other words, that its chief value is due to its so stimulating or restoring the normal tone of the centres, which are connected with thermogenesis, so as to enable them to resist the morbid fever-producing influences.

In coming to this as a plausible conclusion, we, of course, do not mean to assert that we have fairly established it experimentally. It is equally possible, and perhaps, to most minds, it may seem a more probable conclusion, that the influence that we have found quinine to possess over the heat functions in fever is due to a power similar to that which we shall show later in this chapter is exerted by antipyrin.

(To be continued.)

ON THE USE OF ARSENIC IN CERTAIN FORMS OF ANÆMIA.*

BY WILLIAM OSLER, M.D.†

IN an address last year, Dr. Wilks remarked that in therapeutics we do not so much need new remedies as a fuller knowledge of when and how to use the old ones. I do not know a more striking illustration of this than

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is afforded by arsenic, a good old remedy, for which an almost new use has arisen in certain cases of pernicious anæmia. The attention of the profession was directed to the subject by Bramwell in 1877, and although various reports bearing witness to the value of this drug have appeared from time to time, the knowledge of its efficacy does not appear to be very wide-spread, and there are still points in connection with its employment upon which we need information. These, I trust, discussion may bring out, and render clear the direction which future observation should take.

In treating a case of anæmia, it is of the first importance to ascertain, if possible, the cause. For convenience, and until the present complex pathology is simplified, we may classify the anæmias into secondary and primary; the former induced by causes acting upon the blood itself, the latter the result of disturbance in the blood-making organs. This distinction, not always clear, serves to separate two clinical and pathological groups of cases.

The secondary anæmias are the most common, and arise from a variety of causes, as hemorrhage, prolonged drain of albuminous material in chronic disease, and the action of toxic agents in the blood. In very many of these conditions a return to the normal state follows naturally upon removal of the cause, and the regeneration of the corpuscles may take place with extraordinary rapidity, as after a copious bleeding or a sharp fever; but, as a rule, iron in some form will be found useful or indispensable. In three of these secondary anæmias I have found arsenic very beneficial.

1. *The Anæmia of Heart-Disease.*—In chronic valvular trouble we not infrequently meet with an impoverished condition of the blood, which materially aggravates the cardiac distress. The comfort of such patients is in direct proportion to their corpuscular richness, and without any apparent increase in the valve mischief, a reduction in the ratio of the corpuscles is followed by shortness of breath, palpitation, and signs of heart-failure. The value of iron in this condition is well known, and its combination with digitalis a universal practice. Arsenic is also indicated in these cases, particularly in children, or if, as sometimes happens, iron does not agree. In June of this year I saw a lad, J. W., æt. 14, who had had chronic valve-disease for four years. He had been wintering in the South, and went afterwards to the Arkansas Hot Springs. When I saw

him the anæmia was very marked, and he suffered from breathlessness on the slightest exertion. There was no cardiac distress, and the compensation was not seriously disturbed. At the Hot Springs he had several chills, with fever, for which he had taken quinine. He was ordered Fowler's solution of arsenic, beginning with $\text{m} \text{iii}$, three times a day, and increasing to $\text{m} \text{vi}$, if well borne. He had been taking an iron and strychnine pill for several weeks, and had with him a boxful, which he was advised to finish. Digitalis was prescribed, but was not to be taken unless there were signs of heart-failure. The diet was carefully regulated. The lad improved rapidly, and within six weeks had a good color, and had gained several pounds in weight. He had not needed the digitalis. The arsenic was well borne. The improvement had continued on the 3d of this month. Possibly here there was a malarial taint; but, in any case, if medicinal agents had anything to do with the rapid improvement, the credit is due to the Fowler's solution.

2. *In Malarial Anæmia.*—The value of arsenic in chronic ague-poisoning is so well recognized that I need scarcely detain you with the narration of cases in support. There have been several at my clinic during the past year in which the improvement in the blood condition, as tested by the hæmacytometer, has been very remarkable. One case in particular, from Cape May, I may refer to, as the patient, with enlarged spleen, had on two occasions hemorrhage from the stomach. The arsenic in this case was pushed for several months in increasing doses. At one time he took $\text{m} \text{xxxvi}$ of the Fowler's solution daily. When last heard from, in July, he was at work, and had gained in flesh and strength. On May 12, the date of the last blood count, the percentage was over eighty (it had been scarcely fifty), and the spleen had diminished materially in volume. In certain of these cases the ratio of the corpuscles may increase rapidly without any essential change in the volume of the spleen. In the case of M. D., a girl of 15, who has been in the University Hospital on several occasions for the past two years, the arsenic, which was very persistently employed, does not appear to have reduced the spleen in the slightest degree, and yet under its use the corpuscles rose to eighty-five per cent. In this instance, with a history of malaria, there is evidence also of congenital syphilis, to which may possibly be due the splenic enlargement. Injections of arsenic

into the substance of the organ were tried without benefit.

3. *Certain Anæmias of Gastric Origin.*—As a tonic in debilitated states of the stomach, arsenic has long been a favorite remedy with many practitioners. It is sometimes also of great service in the anæmia of chronic gastric catarrh, particularly in alcoholic patients. A good illustration of this was under my care at the Philadelphia Hospital this spring. W. G., aged 25; waiter; hard drinker; history of dyspepsia for several years. Admitted April 5 with anæmia and attacks of giddiness. Ill for ten days; vomiting, pain in stomach, and fainting spells on attempting to stand. Had been failing in strength for some time and getting pale. Had suffered from palpitation, and said he had vomited blood. He was profoundly anæmic, and could not stand without danger of fainting. Tongue coated; great irritability of stomach; vomiting on the slightest provocation; great throbbing of abdominal aorta. He was kept at rest, given a milk diet, and Fowler's solution in 3-drop doses. The red corpuscles were not more than twenty-five per cent., and the coloring matter about the same. The improvement was rapid, and by the 21st the corpuscles had risen to over forty per cent., and the gastric irritation had almost disappeared. The arsenic was well borne, and was gradually increased to xxvii t. i. d. , and on May 4 he was ordered small doses of nitromuriatic acid. On May 17 he left the hospital with a fair digestion and, for him, tolerably good color. On June 24, when readmitted with extensive pleuro-pneumonia, he stated that he had recovered strength rapidly, and had been at work. Possibly, in this case, there was ulceration of the stomach in addition to the chronic catarrh; but, whatever the condition, it was one in which the arsenic seemed to be highly beneficial, and, as he received no other medication, we may reasonably attribute to it the stimulation of the blood-making function. As we shall see, there are anæmias of gastric origin in which this drug is powerless. These are some of the secondary anæmias which have, in my experience, been apparently benefited by the use of arsenic.

Turning now to the primary group, we have here again for convenience to make a division of the cases. There is, first, a large section of what may be called cytogenic anæmias, in which the reduction and alteration in the corpuscles is associated with evident changes in the hæmatogenous tissues,—the spleen,

lymph-glands, and bone marrow. Sometimes these changes are accompanied by an increase in the colorless corpuscles of the blood; and, depending on the organ involved, we then speak of splenic, lymphatic, or medullary leukaemia. If there is no marked increase in the white corpuscles we call the cases splenic anæmia, lymphatic anæmia (Hodgkin's disease), and medullary anæmia. The pronounced leucocytosis in certain of the cases, which gives a special character to the blood, is probably not such an important factor as we have hitherto supposed, and there are such insensible gradations between the cases that in a strict classification they may be appropriately grouped together. Secondly, there is the curious primary anæmia known as chlorosis, characterized by well-marked etiological and anatomical peculiarities; and, thirdly, we have the much-discussed affection, pernicious or essential anæmia.

The anæmias of this primary group offer a remarkable therapeutic study, embracing cases of the most hopeful and the most hopeless character. A clearer knowledge of the etiology and pathology of certain of these forms may give a clue to lines of treatment more fortunate than those we now possess; for, if we except chlorosis, the majority of the cases of this class of anæmias prove fatal. Leukæmia, splenic anæmia, when non-malarial, Hodgkin's disease, are considered incurable affections, and very many of the cases of pernicious anæmia prove obstinate to all treatment.

The relation of arsenic, as a remedy, to this group of primary anæmias is worthy of our closest study, more particularly as of late years remarkable results have been reported from its use. Chlorosis may here be excluded from our consideration, as it would only be in a strangely obstinate case that a practitioner would require to employ arsenic. The specific action of iron in increasing the defective hæmoglobin of the corpuscles, and doubtless, also, in stimulating the formation of new ones, is one of the few instances in therapeutics in which definite tissue-changes, under the influence of a drug, may be followed with scientific accuracy from day to day and from week to week.

In *leukæmia* and *Hodgkin's disease* arsenic has been extensively tried, occasionally with temporary success. We must bear in mind in these affections that there are natural periods of improvement without any special medication. I have met with this in leukæmia, and it must be taken into account in our estimation of the effect of a remedy. Person-

ally, I have not seen any benefit from the use of arsenic in this disease. It was given in several of the eleven cases which I saw in Montreal, all of which were fatal. In Hodgkin's disease the report is more favorable. In 1883 I had two cases, both in women, in which the large glands of the neck and armpits reduced materially under the prolonged use of Fowler's solution, but I do not know the subsequent history of the cases. Several writers have reported most satisfactory results. Karewski* had three recoveries, and of eleven cases treated at the Stockholm Hospital five were benefited.† The persistent use of it in full doses for many months is probably the most efficacious remedy we possess in this disease.

In cases of *splenic anæmia* of non-malarial origin, I cannot say that I have seen any special benefit from arsenic.

We come now to *pernicious anæmia*, in which so much has been gained by the judicious use of this drug. Pernicious anæmia includes cases of very diverse etiology. Any severe anæmia tending to a fatal termination may well be termed progressive and pernicious. In a considerable proportion pregnancy and parturition appear to have been determining factors, while others can be directly traced to defective food, as in many of the Zurich and Bern observations. Excluding these, we have a group of cases of which the etiology is obscure, and to which, in our present knowledge, the terms *idiopathic* of Addison and *essential* of Lebert are applicable. Every year, however, we are reducing the number of cases which we can strictly call idiopathic. It is reasonable to suppose that the extensive changes in the bone marrow found in certain instances are directly related to the profound disturbance in blood formation, just as is the case in hyperplasia of the spleen or of the lymph-glands. An anæmia medullaris is now very generally recognized. Then, there are the cases of pernicious anæmia in which the primary disturbance seems to be in the gastro-intestinal canal, and the condition of the blood the direct consequence of the impaired nutrition. There remain cases in which none of these conditions prevail, and neither during life nor after death do we find any clue to the origin of the anæmia. To such, for the time, the designation idiopathic is applicable. Clinically, it may be impossible to distinguish between these various forms,

and the etiology is often very obscure and gives us no help. The cases which come on during or after pregnancy, or which result from inanition, are readily recognized, and offer, as a rule, a more hopeful prognosis; but we cannot yet with any accuracy separate during life the cases in which there is atrophy of the mucous membrane of the stomach, or extensive medullary changes, from those in which these conditions are absent. A more careful study may in the future enable us to do so, and I have laid stress upon these differences in etiology and pathology because in them will possibly be found the explanation of the success or failure of certain remedies.

Prior to 1877 arsenic was not systematically employed in pernicious anæmia, and to Bramwell is undoubtedly due the credit of its introduction. Neither Müller‡ nor Eichorst,§ in their elaborate monographs published in 1877 and 1878, speak of its use. Padley,|| in an interesting review of the question, has carefully analyzed the cases in which arsenic was not employed, and finds that of forty-eight, forty-two were fatal, while of twenty-two cases treated with arsenic sixteen recovered, two improved, and four proved fatal; and he remarks, that "in the whole list there is not, with one exception, a single authentic case of recovery in which arsenic did not form the chief part of the treatment." Certainly the reports of this affection since 1880 have been much more encouraging, and it need not necessarily be regarded as "almost invariably fatal," to use the words of a leading textbook. Of three cases of pernicious anæmia which I have seen this year two have already proved fatal, and one is in a fair way to recovery.

CASE I.—A man, aged 42, I saw with Dr. Henry. We reported it in full in the April number of the *American Journal of Medical Sciences*, and it is remarkable as an instance of pernicious anæmia, with advanced atrophy of the mucous membrane of the stomach. Arsenic was given during the course of the disease, but not for any length of time, as it seemed to bring on diarrhœa.

CASE II.—A woman, aged about 45, I saw with Dr. Weir Mitchell on January 20. She had been the subject of dyspeptic attacks for some years, and had become very pale, and during last year the anæmia reached an extreme degree. With rest, systematic feed-

* *Berliner Klin. Wochenschrift*, 1884, 17 and 18.

† Abstract in Year-Book of Treatment for 1884.

‡ *De Progressive Perniciöse Anæmie*. Zurich, 1877.

§ *De Progressive Perniciöse Anæmie*. Leipzig, 1878.

|| *Lancet*, 1883, ii.

ing, iron, and arsenic she improved, and was able to go home and attend to her household duties. I saw her in January on her way South. She returned in March very much worse; was again placed on the plan of treatment which had proved so successful in the first attack, but the stomach was so irritable and the digestive power so enfeebled that she sank, and died on the 18th of April. The improvement in her first attack was attributed by Dr. Mitchell to the careful feeding and rest as much as to the medicine.

CASE III.—An active business man, aged 43; seen March 4. History of dyspepsia, and for the past six months failure in strength. Shortness of breath on the slightest exertion, and at times attacks of agonizing pain at the heart resembling angina. He had not lost much flesh; indeed, as is usual in these cases, the subcutaneous fat was well developed. When first seen, the anæmia was marked; lips and tongue very pale, and sclerotics pearly. The general surface did not look so pale, on account of his dark color and a decided saffron-yellow, sub-icteroid tint of the skin. The temperature was a little elevated; pulse 100, and of moderate volume. With the exception of heart-murmur, there were no symptoms elicited in the examination of thoracic and abdominal viscera. The blood showed in a marked manner the corpuscular changes of advanced anæmia. The blood count could not be made at the time, but when I next saw him, two weeks later, there were only 700,000 red corpuscles to the cubic millimetre, and the color percentage was only about twenty. He was put to bed, absolute rest, given a milk diet, ordered massage once a day, and as medicines bismuth and carbonate of sodium, with Fowler's solution \mathfrak{xxv} , three times a day, to be increased one minim daily at the end of a week. He had been taking, by the advice of his physician, an elixir of iron and strychnine, which was continued. For two months there was not much apparent change, though the ratio of the colored corpuscles increased to over 1,500,000 per cubic millimetre. The arsenic had been pushed to 15 drops three times a day, when puffiness of the eyelids and forehead came on, and it was omitted for a week, and started again with \mathfrak{xxv} . On reaching \mathfrak{xlxiii} a slight red rash appeared, and it was stopped, and, after beginning at \mathfrak{xxv} again, he reached \mathfrak{xxx} t. i. d. On these large doses he seemed to improve more rapidly, and he bore them for two weeks or more, when gastric irritation supervened, with diar-

rhœa. The drug was then stopped for ten days, and pills of $\frac{1}{100}$ of a grain of arsenious acid ordered. On January 31 he was allowed to get up. By June 13 he was able to move to Cape May. The blood condition has rapidly improved, and at the last count the corpuscles were nearly 4,000,000 to the cubic millimetre. When seen on September 7 he looked remarkably vigorous, had a good appetite, was at business, and feeling very well. It would be incorrect to attribute the success in this case entirely to the arsenic, but rather to the plan of treatment, in which it was a very important factor. It will be found, I think, that absolute rest in bed, with daily massage, and the strictest attention to feeding, are most important features in the successful management of these cases.

Arsenic has been spoken of as a specific in pernicious anæmia. This is a mistake. The disease, as I have indicated, is so varied, and results from the operation of such diverse causes, that we cannot expect any one remedy to be uniformly active. In a majority of the cases iron is useless, but it sometimes succeeds after arsenic has failed absolutely. Such a case was reported by Finlay* last year, which was cured by iron after a thorough and but ineffectual use of arsenic. I do not think we understand fully the conditions in which it is most serviceable, and for the time we must be content to employ it empirically, on faith of the success which has attended its administration in so many cases. Ultimately, we may hope to be able to discriminate between the cases which call for iron and those in which arsenic is indicated, and with this object in view the cases which come under observation should be carefully studied.

Mode of Administration.—I usually give the liquor arsenicalis (liquor potassii arsenitis), beginning, in an adult, with \mathfrak{xxv} three times a day. Occasionally this is found too much, and I reduce the amount to 2 or 3 minims. After ten days, if well borne, I order an increase of a minim each day, so that by the end of the second week the patient is taking 10 or 12 minims three times a day. This is kept up for a week, and then gradually increased until the physiological effects are obtained. The amount which will induce these varies with different individuals, and those who bear it best seem to improve the most rapidly. I have thought sometimes that the small doses are not so well borne as larger

* *Lancet*, 1885, i.

ones, and are more likely to cause gastric irritation. Young people bear it remarkably well. Within the physiological effects there is no special limit to the quantity, and, as in chorea, I make them my guide in the administration. A very important point is the continuous use for many weeks or months, omitting for a few days if unpleasant effects arise. Even after apparent recovery I advise the continuance of the drug. When the liquor arsenicalis is not well borne, the arsenious acid in pills may be tried, or the solution may be given hypodermically. In these cases of severe anæmia I never care to use hypodermic injections systematically, as I have seen ecchymosis of the tissues follow, and in several instances distressing small abscesses. By the rectum, it is usually well borne.

The three points I would indicate for this are,—

1. In what secondary anæmia is arsenic beneficial, and under what conditions is it preferable to iron?

2. In pernicious anæmia what cases are benefited by arsenic? What by iron? How shall we frame rules for our guidance in the matter, or must we still work empirically?

3. In the administration of arsenic, what is the best form and method?

THE SALTS OF MANGANESE IN FUNCTIONAL DISORDERS OF MENSTRUATION.*

By J. L. WATKINS, M.D., NASHVILLE, TENN.

WHEN the Committee on Essays appointed me to read a paper on the "Therapeutic Uses of Permanganate of Potassium," I had little idea of the magnitude of such an undertaking, and went vigorously to work collecting such data as I had access to, and at the same time instituting some experiments to ascertain and establish in my own mind the location of permanganate of potassium as an antiseptic, disinfectant, etc. As the work progressed, its results, whether valuable or not, grew to such proportions that it was clearly impracticable to undertake a presentation of the whole subject before you in one evening. I determined accordingly to ask your attention to only one of the many claims it has upon us as a valuable therapeutic agent, that of its use as a regulator of the

menstrual function. Nor can I undertake a very extended consideration of the manner in which it acts, as the most of my time shall be consumed in reporting cases upon which I have tried it.

Remembering how much has been written in the last three years upon this subject, and how favorable, in the main, have been the reports, I have been surprised to find, upon inquiry, how few of the physicians in this city use it; how few, indeed, know of its action as an emmenagogue.

It was in the early part of 1883, I think, that I saw Ringer and Murrell's article on the subject in the London *Lancet*. I determined at once to make a thorough trial of the remedy, and unscientifically to make it a routine treatment until I could satisfy myself as to its merits. Up to the 1st of August last I had used it in nineteen cases, of which I make the following report, giving them in the order in which they occur in my note-book.

CASE I.—One of the most striking in its results I have met with was in Mary A., Jefferson Street, a thin, consumptive-looking mulatto girl, 17 years old, who had never menstruated, who gave a history of tubercular heritage, but the disease had not actively developed itself up to the time I saw her in August, 1883. I treated her vigorously with cod-liver oil, hypophosphites, iron, exercise, etc., and while her general health and physique were greatly improved, up to January, 1884, four months later, she had failed to menstruate. My first opportunity was here presented to try the remedy for which Ringer had claimed so much. Accordingly, I ordered the permanganate in gr. ii, t. i. d., with no other directions. The next day I was summoned hastily by her mother to know if I had poisoned her daughter, so great was the distress after taking each pill. This frightened and discouraged me somewhat, but I wrote for a dozen pills composed of gr. ii ext. hyoscym. and gr. $\frac{1}{4}$ ext. opii each, one to be taken a half-hour before each permanganate pill, and urged my patient to persevere in the use of the medicine at all hazards. She was enabled by the last prescription to better tolerate the permanganate, but still suffered from the characteristic effects of the drug,—viz., substernal pain, distressing nausea, vomiting, and griping. She stoically kept this up for ten days, at the end of which time a slight, pale flow was observed, but lasted only one day. The remedy was discontinued the next day for nearly three weeks, and then renewed. After struggling

* Read before the Nashville Academy of Medicine, September 30, 1886.

with its bad effects for eight days, she was rewarded with a menstrual flow of no mean proportions, lasting three days. The next period the remedy was left off, and no flow appeared; it was tried again the succeeding month with satisfactory results.

Since this time she has menstruated occasionally, frequently missing, however, but refuses to take the permanganate on account of the disturbance it occasions, and because the absence of the flow does not inconvenience her as much as the medicine does.

CASE II.—Occurred about the same time, in January, 1884, in Ella B., an octaroon, unmarried, aged 20 years, with perfect physical development and excellent previous health. Had just passed a third period without menstruating; said it made her sick, and she wanted relief. I ordered permanganate of potassium, 2 grains in solution, to be taken every four hours; but she could not stand the disgusting taste, and, after the second dose, a change was made to 2 grains in pill form every four hours. My patient was admonished that she was taking a strong medicine, and that its effects would be as disagreeable as its taste. Two days afterwards, being called to see her, I found a copious flow was in progress, but accompanied by severe bearing-down pains. She had suffered for more than an hour after each dose with the most violent pains in the stomach, behind the sternum, and in the occipital region; with nausea, vomiting, sickening eructations, and great prostration. Thinking she had only dysmenorrhœa, which would be corrected by a continuance of the remedy, I insisted that she should not leave it off, and took my departure. Early the next morning I answered a hasty summons to 'see her, the messenger saying "something had happened." I was thunderstruck upon entering the room to be shown a well-developed three months' fœtus and placenta, which had passed a short time before, and to find the girl flooding dangerously!

I did not know as much about the race as experience has since taught me, and never suspecting pregnancy, as she was unmarried, had innocently, or rather through negligence, I fear, produced an abortion, the very thing the wretch desired. I had been caught in the trap she laid for me, but said nothing about it, stopped the hemorrhage, and left.

Dr. Ringer says permanganate of potassium will not produce abortion; but it certainly did so in this case. Whether it acted as a direct oxytocic, or whether the miscarriage

was brought about indirectly by the violence of the heaving and vomiting and the extreme prostration, I am not prepared to say.

CASE III.—Mrs. W. J. R., Church Street, aged 25 years; married three years; had only one child, which was nearly two years old. Consulted me in February, 1884, for cessation of menstruation. She was small, but round and plump, with good color. Always had good health, with the exception of occasional dysmenorrhœa or menorrhagia, accompanied by distressing headache. Like the child in the saying, I had been burned once (in the last case), and was afraid of the fire (in this one). Here was a young married woman who had weaned her child six months before, why might she not be pregnant also? My fears were soon put at rest, however. She knew she had not been "caught," as she expressed it, this time, because she had been in Louisville, away from her husband, for nearly three months, nursing her sick mother and father, the latter having just died. She had menstruated twice during the first month of her absence, and had seen nothing since; which irregularity was manifestly due to the close confinement, loss of rest, worry, anxiety, etc., incident to nursing sick and dying parents. She had just returned home two days before, and her sickness was then due, causing dragging pains in the pelvis, nervousness, vertigo, and headache. I gave her 2 grains of the permanganate three times a day after meals. The drug caused her no discomfort whatever, and she began menstruating after the fourth dose, her sickness continuing three days. In February, 1885, she consulted me for the same trouble, and was treated in the same way with equal success. Also in December, 1885, with like results. She moved to Chicago a few months since, and three weeks ago I had a letter from her asking for the same prescription, saying the change of climate had not agreed with her, and she had not menstruated since going there. I prescribed the permanganate, but have not heard from her since. In this case the remedy was remarkably prompt in its action, and caused no gastric disturbance.

CASE IV.—March, 1884. Mrs. George C., Jefferson Street, aged 37, married, but had not lived with her husband for nearly a year, he being off in another county at work. Had never borne any children; was a hard-working woman, but poorly fed; had not been perfectly regular since her marriage, and had not been sick now for four months; suffered with slight difficulty of urination, habitual constipation,

frequent and severe pelvic pains, pain in the back and left hip. She took the permanganate capsules, 2 grains each, three times a day. They produced no effect beyond that of great gastric disturbance, and were discontinued in ten days. The treatment was begun again a week before the next period, but fell short of the desired effect, as it did also the two months following. I promised her to change the treatment the next month, but she never returned. I made no examination of the patient, and cannot say precisely what was the cause of the amenorrhœa.

CASE V.—In August, 1884, attended Mrs. Lizzie K., Church Street, aged 31 years. Had been a widow two years; was the mother of two children, the younger 7 years old; had missed last two months without apparent cause, her health being very fair with the exception of an annoying nervous cough, for which I had prescribed several times without success. Two-grain capsules of the permanganate were administered three times a day, causing the usual gastric distress, but giving negative results as far as menstruation was concerned. They were discontinued in six days, but renewed four days before the next period was expected. Normal menstruation came on in due time, and she has continued regular since. The cough disappeared with the return of the menses.

CASE VI.—In July, 1884, was one of metrorrhagia in a German girl, Annie F., 19 years old. Extreme plethora was combined with a large development of the lymphatic temperament in this case. The complexion was muddy, and her puffy face disfigured by an abundant eruption of *acne pustulosa*. She was chambermaid in a German hotel, and had a good deal of scrubbing and other hard work to do. She had suffered with metrorrhagia for five months, her sickness appearing with irregularity every two or three weeks, and lasting from seven to ten days. This weakened her and rendered her so utterly miserable that work became intolerable, if not almost impossible, and she was crying nearly all the time. Wishing to give the permanganate a fair trial in this case, I prescribed it alone and sent her to the country. She returned in two days saying she could not take the medicine, it made her so sick. I imagined the extr. of hyoscyamus alone would lessen its disagreeable effects, and so ordered 2 grains of it, to be taken a half-hour before the permanganate capsules. The result was not what I hoped for, but enabled her to bear the capsules a little better. She returned from

the country to her work in six weeks, her general health much improved, and a decidedly satisfactory improvement in the amount of her flow. She had left off the hyoscyamus in four days, but had kept up the permanganate throughout the month, her sickness not appearing until twenty-four days after the cessation of the last flow, and continuing only five days.

I saw her three weeks afterwards. She was still taking the permanganate notwithstanding its disagreeable effects, and the intermediate flow had not appeared up to that time, a few days from the next period. I have never seen her since.

CASE VII.—August, 1884, Matilda H., aged 20, of German parentage, living in the country, healthy, industrious, and fond of her flowers. She got her feet wet while working in the garden, causing sudden suppression of her menses, which had just begun upon her. She was suffering so intensely with pelvic pains, headache, cold extremities, and short, rapid breathing, that I gave her a hypodermic injection of morphine and atropine. Ordered potassii permanganas, gr. ii, t. i. d. The flow reappeared satisfactorily after the fourth capsule had been taken, but the remedy was continued another day.

CASE VIII.—Mary B., single, aged 19, German cook. Her father's home in East Nashville was burned on the night of February 2, 1885. She was aroused from sleep, ran out into the cold night air without more protection in the way of clothing than she had worn in bed. The sudden exposure to cold, and the severe shock and fright she had endured, caused a suppression of her menstruation, which was then in the second day of its progress. I called to see her on the morning of the third at a friend's house, found her with a most agonizing headache, uterine pains, and chilly sensations. I ordered for her permanganate of potassium in 2-grain capsules, to be followed by two tumblers of water each time, and to be taken after meals. They gave her very little trouble, causing only a sense of fullness in the stomach, and during the next night her sickness reappeared, and lasted two days.

She consulted me in June of the same year, having gone two days over her time, with no other signs of menstruation than those of dizziness and backache. She brought with her the same box of capsules she had taken before, and asked if she must take them again. I found six of them left, and directed her to take them as she did before. Five of them

caused the menses to return, but gave her more pain in the stomach than at first.

CASE IX.—Fanny R., Hayes Street, 17 years old. Came here from the country in January, 1885, to attend school. Was tall, thin, rawboned, anæmic, with frequent swelling of the ankles, and hysterical, bordering on insomnia. Indifferent to her studies, but devoured novels with passion, and lived all the while in a morbid atmosphere of romance, dreaming and sighing. She had not menstruated in February and March, and was anxious about herself. I saw her in April, and at my first visit prescribed a pill of valerianate of zinc, belladonna, nux vomica, aloes, and iron, and 2-grain capsules of binoxide of manganese, each to be given three times daily. She reported at my office, three weeks later, improved in general health, had better color, was not so nervous, and slept well, but no menses had appeared. I told her to keep up the tonic pills, but changed from the binoxide to the permanganate, to be begun four or five days before the next period. This change, made without reason, cost me my patient, as she sent for me two days after she began taking the permanganate, complaining bitterly of its distressing effects upon the stomach. As I had neglected before to tell her to take it after meals, and to follow it with large draughts of water, I gave her those directions, and promised to return the day following, after assuring her she would have no more trouble. The next day she sent word that I need not come out. I suppose she had found the permanganate, with its vigorous manifestations, decidedly too unromantic for her, and had fled to the ideal realms of unreal infinitesimals. Indeed, I heard as much afterwards.

CASE X.—Mollie H., age 22, sister of Case VII., consulted me in June, 1885. Had not menstruated in two months; was to be married in September, and wanted to be all right by that time. She was of a decidedly bilious temperament and sluggish in her movements, had no appetite, was anæmic and restless at night, had frequently suffered with dysmenorrhœa. She was hired out as house-girl, and did a great deal of hard work for a large family. Put her on the 2-grain permanganate dose, to be followed by large draughts of water. This made her so sick she had to quit work and go to bed, but discontinued the medicine after the fifth dose. I accordingly changed to the binoxide of manganese in 3-grain doses before each meal. She tolerated this very well, and kept it up

through July and August. Although the general health was improved, the menses failed to put in an appearance in July, but they came on in August, also in September, during which month she married and I lost sight of her.

CASE XI.—July, 1885. A simple case of suppressed menstruation in Matilda L., a German girl, 20 years old, caused by taking a cold bath while sick. The function was restored by a few doses of permanganate capsules, followed by large draughts of water, and no unpleasant effects from the drug.

CASE XII.—July, 1885. Mrs. John M., Gallatin Pike, 32 years old; a small, frail woman. Had never menstruated or borne children during the ten years of her married life. Suffered almost constantly with pain in the back, pelvis, and left hip; had no discharge of any kind. Thought if she could have her menses restored she would have better health. She would not permit an examination, so I had to strike out in the dark, and prescribed the binoxide in 2-grain doses three times a day. After continuing this five weeks ineffectually, she took the capsules every four hours with no better result. I then added a tonic treatment, and changed to the permanganate in 2-grain capsules after each meal with copious draughts of water. This was taken two months, was well borne, but accomplished nothing in the way of establishing menstruation. In the mean time the lady had taken on flesh, and was much improved in general health. I could not induce her to continue or to undertake another line of treatment.

CASE XIII.—Mrs. Jenny B., Hillsboro' Pike, about 38 years of age; highly nervous temperament, small, wiry figure; had been a widow several years. Was called to see her on the night of February 2, 1886; found her suffering with an aggravated form of hysteria. Had been nursing her sick father-in-law several weeks, and, on account of the loss of sleep, irregularity of habits, anxiety, etc., had passed over her last period without menstruating, and had been more or less hysterical ever since. I administered to her immediate wants that night, and told her to let me know a week before her next period was expected. On the 15th of the same month she sent for me, saying she was due on the 20th. Permanganate capsules in 2-grain doses after each meal, followed by a tumbler or two of water, were ordered. She came to my office March 1 to say the remedy had acted promptly, and had not given her the trouble I had caused her to anticipate.

CASE XIV.—February, 1886, Jennie H., laundry-girl, 21 years old, was like Cases VII. and XI., one of suppressed menstruation from exposure to cold, and was treated successfully in the same way.

CASE XV.—In February, 1886, I was called to see Amanda L., a colored girl, 24 years old, who two days before had taken on her own responsibility a nickel's worth of calomel for biliousness. How much she got I do not know, but she had to endure for the next six weeks the most horrible tortures of mercurial salivation, which passing off under treatment, left her in a most pitiable condition of anæmia and vital depression, with metrorrhagia which had lasted more or less throughout the period of the salivation, but which had escaped my notice, not having had my attention called to it. Her stomach was so weak and irritable still that I was afraid of the permanganate, but put her upon the binoxide to see what effect it would have upon the too abundant flow. Four-grain capsules three times a day were ordered, and at the same time the stomach treated by appropriate remedies. I had the gratification in three weeks of seeing her well and at work again. The excessive flow had been stopped some days before, and normal menstruation came on at the next period and continued only four days.

CASE XVI.—Frances J. was brought to me by her mother in April, 1886, with the following history: She was now 18 years old, of large physique, lymphatic temperament; had been in excellent health up to her fourteenth year, since which time she has had almost constantly a dull headache, and regularly every four weeks has had epileptic convulsions, foaming at the mouth, biting her tongue, and remaining unconscious several minutes. These convulsions, always short in duration, came on at frequent intervals for three or four days, and then passed off to reappear at the next menstrual period. As she had never menstruated, the epilepsy may be easily accounted for. I put her upon the Brown-Séquard treatment for the epilepsy, and made an attempt to remove its cause by establishing menstruation with the permanganate first and the binoxide afterwards, beginning in each case grain ii t. i. d., and running up to grain iii every four hours in the former, and grain iv every four hours in the latter. They made no impression whatever except upon the stomach, but were comparatively well tolerated. The headache entirely disappeared under the treatment, and the par-

oxysms were much milder but still continued. The manganese was continued until July, when they went to the country to remain all summer. I stopped it, as a thorough trial had proven it valueless in this case. Her mother would not permit an examination, she said, until other treatments had been exhausted. She returned a few weeks since in pretty much the same condition, except that there is a growing intellectual debility. She has consented for a thorough examination, which I suspect will reveal cause for more radical treatment than she has had.

CASES XVII. AND XVIII.—Two sisters, Mary H. and Sarah H. They are 17 and 19 years old; both have been chlorotic for some months, and have always been "irregular." They are large, fleshy, sluggish in their movements, and are at the same time extremely nervous. I have had them under observation over three months; the older one, though not yet well, has become less chlorotic, stronger, and more active, and the last two periods have been normal. The younger, though not so markedly chlorotic at first as her sister, has not improved in any respect. Both had the usual permanganate capsules.

CASE XIX.—Dora G., a Hungarian, unmarried, 20 years old, came under my notice August 29 for another trouble, but told me then she had suffered for some months with too much sickness. She moved here, in November last, from New York, to live with a sister; but having more friends in New York, and pleasanter occupations and diversions there, she soon grew homesick, peevish, and fretful; lost interest in everything here, and pined for friends and associations there, and lapsed from a state of menstrual regularity into a metrorrhagia. Each period would last seven days, and then there would be an interval of seven days before the next came on. One week on and one week off we might say. This had continued with unbroken regularity for nearly nine months. Dr. Jacobi, of New York, had treated her for the same condition three years ago with tinct. ferri chloridi, I judge, as she said it was a red liquid in a small glass-stoppered bottle, to be taken through a tube. This cured her in a short time, and would have done so again I suppose; but I wished to try the manganese treatment, and accordingly put her on the binoxide, grain ii, in capsules, after each meal. Her last sickness passed off on the 1st, she then looked for a rest until the 8th, when she expected it to begin again and last until the 15th. She began the binoxide on the 2d and is still

taking it. It produced no gastric irritation, but a slight catching pain behind the sternum occurring after each dose. She was in my office on the 21st of this month, and reported no flow since the 1st, the first time in nine months that she had passed two consecutive weeks without menstruating.

The first criticism you have to make is that I have thrown aside all reason and discretion in not selecting my cases, and the proper remedy for each case. I plead guilty, but claim method in my madness. As I stated in the beginning of the paper, I made it a routine treatment from the first, regardless of indications, that I might be enabled finally to judge what class of cases it was suited to, and what would do better under other forms of treatment.

We have seen from Case II. that it possesses more or less oxytocic effect, whether direct or indirect, and should therefore be given cautiously to married women suffering with amenorrhœa.

Now let us straighten out this mass of empiricism and see what else we can glean of value from it. And to the better accomplish this, I shall undertake to answer from my experience with the above cases the eight questions propounded by Dr. Billington, in *The Record*, in his superb paper on this subject.

"1. Is the permanganate of potassium an efficient emmenagogue in certain forms of amenorrhœa?" Of the nineteen cases reported, one was a pregnancy, three were cases of excessive menstruation; of the fifteen remaining cases, five were unsuccessful, leaving nearly sixty-five per cent. of successful cases. Of those where the remedy failed, in at least three of them—Cases IV., XII., and XVI.—there was evidently some organic disease of the menstrual apparatus; this reduces the cases of functional amenorrhœa to twelve, ten of which, over eighty per cent., were successfully treated. For no other single emmenagogue is so great a percentage of successes claimed. Indeed, no other remedy recommended for this condition, with the exception possibly of iron, is so far-reaching in its therapeutic effects, and none reach out in so many different directions to do the work, as do the salts of manganese. I therefore answer in the affirmative.

"2. To what forms is it applicable?" Only to functional amenorrhœa, as contrasted with that produced by organic morbid conditions of the genital organs. It certainly cannot supply a missing uterus or ovaries, nor has it

been yet proven to stimulate to normal growth those organs when in a rudimentary state, or when they have become atrophied from any cause. Nor is it claimed for the remedy that it can puncture an imperforate hymen, straighten out the canal of an anteverted or retroflected womb, dilate a pinhole os, channel out an atresia of the vagina or uterus, or exert a curative influence upon inflammatory conditions of any of the pelvic organs, or upon ovarian cystic degeneration.

It is in menstrual disorders caused by abnormal states of the blood and the sympathetic nervous system that we claim for it sovereign power. Under the former we find it of value in anæmia, chlorosis, plethora, and even phthisis; and while I have never prescribed it in such cases, I think, on account of its tonic and invigorating effect, we might reasonably hope for some benefit in amenorrhœa from cirrhosis, Bright's disease, etc.

In those cases in which there is a decrease of nervous excitability and activity, an atonic condition of the ganglionic nervous system from emotional causes, mental depression, overwork, indolence, and luxury, want of fresh air and exercise, and occasionally from constitutional disease, it is the remedy *par excellence*.

"3. Is it also remedial to certain forms of dysmenorrhœa, menorrhagia, and metrorrhagia?" It will be seen how well the remedy acted in Cases VI., XV., and XIX., which were functional metrorrhagia; and it was equally efficient in the cases of dysmenorrhœa mentioned.

"4. To which of its component elements is this action due?" and, "5. What is the nature of this action?" I do not believe its remedial effects, in the cases recited, due entirely or principally to either the manganese or the potassium, but rather to the oxygen contained in composition. Drs. Ringer and Murrell claim that it is due to the manganese, but other observers, prominent among whom is Dr. Fordyce Barker, have shown that the chlorate of potassium, an oxidizing agent, is nearly if not quite as effectual. Dr. Broadbent has shown the same thing in respect to the chloride of potassium. On the other hand, it is certainly not due to the potassium, because the permanganate of sodium and the binocide of manganese accomplish the same results. I am thoroughly in accord with Roberts Bartholow that oxygen is, in the main, the remedial factor. Look at its formula, KMnO_4 , an unstable compound readily decomposing, evolving seven-eighths of its oxygen, particularly

in the presence of moderate warmth and an acid, both of which conditions we have present in the stomach; hydrochloric and lactic acids with an internal temperature, especially during digestion, of something over 100° F. It is well known that this oxygen in its nascent state contains much ozone. The permanganate of sodium (NaMnO_4), the binoxide of manganese (MnO_2), and chlorate of potassium (KClO_3), all containing a large proportion of oxygen held in yielding bonds, and therefore used by chemists as active oxidizing agents, undergo the same character of decomposition in the stomach, yielding almost as great a proportion of ozonized oxygen. This agent has a tonic and invigorating effect upon the central and ganglionic nervous systems. It is mildly stimulant to the entire organism and promotive of activity of all functions, the sexual function included. It produces a feeling of exhilaration and well-being, promotes digestion and assimilation, and therefore conduces to constructive metamorphosis, both by improving the quality of the blood and toning up the nervous system, thus proving of benefit in anæmia and chlorosis. Even those who hold that manganese is the component element of importance in menstrual disorders, grant that permanganate of potassium acts somewhat quicker and more readily, and in smaller doses, than any of the other salts, an acknowledgment in favor of the oxygen theory, because, while the manganese remains the same in all of them, the permanganate contains the greater proportion of oxygen than the others and parts with it more readily.

It is objected that this property of the drug of so easily giving up its oxygen to organic matter, in the stomach as elsewhere, renders it practically useless. I am not sure but that this very property is an advantage, for the simple reason that while the oxygen is quickly liberated, the processes of oxidation are all slow, and the stomach has ample time to take up a large proportion of oxygen, which is rapidly diffused into the blood. Again, the salt is very soluble, and, as well as chlorate of potassium, is so diffusible that not a small quantity of it is taken up, as such, by the blood before deoxidation has been completed.

Now, on the other hand, I do not deny that a certain, though small amount of this action, is due to the manganese. It also is an agent favoring constructive metamorphosis, being of the same chemical group as iron, nickel, etc., all of which exercise more or less influence either upon the sexual centres or the

sexual organs themselves. The result of Case II. is significant in this connection.

"6. Does the permanganate of potassium, or manganese in any form, improve the blood condition in anæmia or chlorosis?" From what has just been said such seems clearly to be the case, and such is the consensus of opinion as the result of experience with other observers; Ringer and Murrell being the only ones I call to mind now who dissent from this opinion. They say "the permanganate not infrequently brings on the period without in any way improving the anæmia." True, but I believe this to be the case simply because menstruation, in the cases referred to, was brought on quickly and the remedy discontinued; whereas anæmia and chlorosis both require prolonged treatment. They argue, too, that the treatment cannot be of benefit in anæmia because it succeeds equally well in plethora. I ask, would either of these gentlemen deny a patient iron to assist in stopping a hemorrhage because it is a blood-making agent; or deny a patient calomel in bilious diarrhœa because it produces bilious evacuations?

"7. Is the binoxide of manganese an efficient therapeutic agent?" A question scarcely necessary to ask, so convincing are the evidences and reports that such is the case; and that it is almost, if not quite, as valuable as the permanganate in functional menstrual disorders.

"8. What are the best modes of administering the salts of manganese?" Kaolin, cerate of petroleum, cocoa-butter, and other excipients have been recommended as suitable bases for pills; but, besides the liability to explosion, slow decomposition, etc., I object to its being given in pill form because of its local irritant action when it is held at one point in the stomach, as must be the case in the excipients mentioned. They dissolve slowly, and set up so much irritation at the point of the stomach at which they happen to be located as to cause griping pains, nausea, etc. Compressed tablets are objectionable for the same reason. It will be seen from my cases that after trying several methods I finally resorted to giving it pulverized and in capsules, followed immediately by one or two tumblers of water, preferably not cold. If this is done, the gelatin-capsules dissolve off quickly, leaving the salt free, having nothing to confine it to a limited space, to disperse itself over a considerable portion of the stomach; and being pulverized, and followed by a large quantity of water, it is dissolved rapidly, and

not concentrated enough to produce any distress at all in the majority of cases. Few of my cases treated in this way had any trouble. If, however, this method should be followed by much pain, I do not see any objection to the temporary use of hyoscyamus or small doses of a denarcotized preparation of opium to establish a tolerance. The binoxide may be given in capsules, and occasions very little disturbance. Two grains of the permanganate three times a day, and 2 to 4 grains of the binoxide from three times a day to every four hours, is about the proper dose. It is only necessary to begin with the permanganate six or seven days before each period, but the binoxide may be continued throughout the entire month for several months. Its value might be greatly enhanced by using it in conjunction with other remedies appropriately selected, though the tendency seems to be to give it alone. It is best borne when given about an hour after meals.

Why do we have so many failures reported? Several causes are apparent. The remedy is often abandoned too early, either because the proper precautions have not been taken to prevent its bad effects upon the stomach, the patient refusing to take it long, or because having tried it through one period without success, it is left off and some more familiar agent or remedy resorted to. My convictions are that if its use was persevered in the number of failures would be largely reduced. Then too many, whether wittingly or not, are guilty of the same grave fault with which I charged myself in the beginning, that of making a routine practice of its administration, not exercising sufficient intelligence and care in choosing their cases. They disregard diagnosis, and make no discrimination whatever between functional menstrual disorders and those caused by organic changes or diseases; and then because they necessarily often fail, lay the burden of their own ignorance or indolence upon a remedy which deserves better treatment. Finally, the treatment is not a specific for menstrual disorders; but, while I do not pin my faith indissolubly to it, I must say with Thomas that "permanganate of potassium is the best emmenagogue yet discovered."

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HYOSCINE AS A HYPNOTIC.

By W. D. HAMAKER, M.D., MEADVILLE, PA.

IT may be of interest to publish the marked effect of hyoscine in the following case. The patient is a clergyman, 57 years old, who for several years, owing to intense mental application, has been troubled at times with insomnia, which has been worse in the spring and early summer after the hard winter's work, and before he takes his summer vacation. Very often for weeks at a time he has been unable to fall asleep until four or five o'clock in the morning, and then only for a short time.

Ordinary hypnotics have been unavailing in producing sleep, a grain of morphine at one time and *seventy* grains of chloral at another time having failed to do any good.

The insomnia was followed later by headaches and loss of appetite and general loss of tone.

Previous to the administration of hyoscine he had suffered for several weeks from most distressing insomnia, and violent headaches from the loss of sleep.

Knowing the ineffectiveness of the ordinary hypnotics, I prescribed a solution of hyoscine hydrobromate, containing $\frac{1}{12}$ gr. to the teaspoonful. I give the patient's own account of its effects:

"June 14.—Sat in complete repose for an hour, reading. Respiration 18; pulse, sitting, 70; standing, 76. Pulse irregular, contracted, and very easily compressible. Pupils natural; no headache; no inclination to sleep.

"At 11.30 P.M. took $\frac{1}{12}$ gr. hyoscine in solution.

"At 12.15 respirations 16; pulse, sitting, 67; standing, 72. Pupils *slightly* dilated; no interference with accommodation; no peculiar sensations or feelings noticeable. Fell asleep at 2.30 and slept till 8 A.M. Awoke refreshed; pupils natural; no headache.

"June 15.—Respirations 19, and pulse, sitting, 80.

"At 11.15 P.M. took $\frac{1}{8}$ gr. hyoscine.

"At 12 M. respiration 16; pulse 70; pupils very slightly dilated. Fell asleep at 1 A.M.; slept till 7.30; no unpleasant effects; no headache; feel much better on account of refreshing sleep.

"June 16.—Respirations 18; pulse 82.

"At 11.30 P.M. took $\frac{1}{8}$ gr. hyoscine.

"At 12.30 respiration 14; pulse 61. Pulse irregular and very feeble; pupils very slightly dilated; slept five and one-half hours.

"June 17.—Respirations 18; pulse 80.

"At 11.15 took $\frac{1}{8}$ gr. hyoscine.

"At 12.15 respirations 15; pulse 70; slept six hours."

At another time the patient took $\frac{1}{8}$ gr., when respirations fell to 13 and pulse to 58. Pulse became very irregular and weak.

The solution of hyoscine used had been made several months previously, and had been kept in the light. Attention was called to this, when the patient obtained a fresh solution of the same strength ($\frac{1}{12}$ gr. to teaspoonful). He took one night two teaspoonfuls ($\frac{1}{6}$ gr.), and in a short time respiration became very slow and the pulse fluttering, and finally scarcely perceptible.

After this the dose was maintained at $\frac{1}{12}$ gr., and always had the desired effect. The question arose whether the solution of hyoscine deteriorates by long standing or by exposure to light.

In this case, then, the effect of hyoscine was,—

1. To affect respiration, reducing the number of respirations from three to six per minute in a short time. A source of error lies in the fact that the patient counted the respirations himself, but uniformly there was diminution.

2. To cause slowing of the pulse-rate at every administration, and to weaken the force of the pulse.

3. To produce or *allow* natural sleep. The sleep was always refreshing, and without any after-effects of the drug whatever.

4. To cause sleep, but not to cause "drowsiness" previous to the induction of sleep.

5. In overdose ($\frac{1}{8}$ gr.) to produce alarming disturbance of the heart's action. At one time the patient feared absolute failure of the heart after taking $\frac{1}{8}$ gr. of the new preparation.

6. Entire relief of headache which had been so distressing.

7. Improvement in general health, following, of course, the natural sleep obtained every night.

The patient continues at present to take $\frac{1}{12}$ gr. at bedtime with happy effects. The benefit in this case was more noticeable on account of the utter failure of ordinary hypnotics.

A friend of mine, some weeks ago, prescribed $\frac{1}{100}$ gr. hyoscine for a young lady suffering from phthisis. It produced violent delirium. Afterwards $\frac{1}{100}$ gr. produced sleep, and was attended by no bad effects.

The dose of hyoscine, as indicated by these

two cases, should always be small at first, and gradually increased as it is required or is well borne. I remember to have given to a patient in the University Hospital $\frac{1}{8}$ gr. hypodermically. He was suffering from delirium tremens, and his heart was very weak. He slept several hours, and showed no bad effects. This I should regard as a dangerous dose until smaller doses had been tried.

THE TOXIC EFFECTS OF TEA.

By JAMES DAVIES, A.M., M.D., CANASERAGA, ALLEGANY CO., N. Y.

THE perusal of Dr. Thos. J. Mays's paper on "Tea and its Alkaloid, Theine," has induced me to ask of you space for a few remarks from the Druidic faculty, which, in my opinion, may set matters right between Dr. Mays and Drs. Bullard and Morton, or, at least, help to do so. The Druids have thoroughly investigated the subject of tea by the tests of experimental physiology as well as those of chemistry. I will be as brief as I can.

1. Theine and caffeine are not identical.

2. There is such a thing as chronic tea-poisoning, and, in the main, Dr. Bullard is right, as far as the reflections on the consumption of tea by the public are concerned.

3. Dr. Morton is perfectly right in concluding that the continued and immoderate use of tea led to headache, vertigo, ringing in the ears, tremulousness, nervousness, exhaustion of mind and body, with disinclination to mental and physical exertion, increased and irregular action of the heart, dyspepsia, diminution of the amount of urine and urea, and retardation of the metamorphosis of tissue.

4. These symptoms ensue from the use of the infusion of tea.

5. Sleeplessness should have been added to the list.

6. The consumption of three grains of theine per day, or even of five, would not cause the above symptoms.

7. The consumption of tea containing so much theine—that is, the partaking of it according to the usual manner of the common people—would tend to produce the aforesaid symptoms.

8. The great subject is the consumption of the infusion of tea-leaves, but Dr. Mays's subject is another thing altogether, namely, the administration of theine.

9. The tea-tasters, as well as our tea epicures, principally get hot water and theine from the infusion; but the public would consider that product a most unsatisfactory thing.

10. Tea contains boheic acid and tannin, as well as theine and an essential oil.

11. The common people must wait for the tannin to draw before the infusion is worth the drinking.

12. What are the physiological effects of tannin on the human stomach, and especially those resulting from the persistent use? I need not rehearse them to the medical readers of the GAZETTE; but I would ask them to compare them with above symptoms.

13. The physiological effects of tannin, as handed down to us by the Druidic College of the twelfth century, are identical, as far as they go, with those reported in our modern medical and pharmaceutical works; but I would add that the old Druids further considered tannin the most potent of all the products of nature in producing *sterility* and *barrenness*; and tea-drinking, as practised by the public, undoubtedly acts in the same direction.

RESORCIN IN ECZEMA.

By H. P. CHACE, M.D., HIGHLAND FALLS, N. Y.

I WISH to call the attention of your readers to the use of resorcin in eczema. In the April number of the GAZETTE I saw a report from Dr. Wyss, taken from the *Fortschritt*, of his use of this remedy. I had at that time upon my list two cases of general eczema that had defied the whole range of eczema remedies. One case was about six months' standing and the other four months'. Both persons had been subject to this disease for years, at times. One of my patients having had it several years ago continuously for fifteen months was seen by two New York City specialists, and finally went to Europe and consulted the famous Erasmus Wilson. I go into this detail to show that the case was of the obstinate type. The attack for which I was attending him had lasted about four months. The eruption extended over every part of his body, except from the knees down. The scrotum was swollen to three times its natural size; the face and eyes swollen very much, and, as may be imagined, the itching and burning was intolerable.

My other case was but a repetition of the one I have described, except that the erup-

tion completely covered the body at times, and would then get a little better in some places, but in a short time returning with renewed force.

After reading the article referred to, I immediately ordered from my druggist the following:

R Resorcin, ʒii;
Glycerin, q.s. ʒii. M.

Sig.—Apply with camel's-hair pencil morning and evening.

I had very little faith that my patients would receive any benefit from it, but, to my great surprise, the remedy worked like magic. Improvement was marked in forty-eight hours, and in one week both of my patients were attending to business, and are both at this writing perfectly well. Since then I have had sent me one other case of general eczema, and six cases that were localized, the remedy proving just as efficacious in every instance except one. In one case the lady could not follow my directions about keeping her hands out of water. In this case the hands are very much better, but not yet entirely healed.

I see in a report from the Dermatological Society, Dr. Stelwagon, of Philadelphia, claims resorcin is rarely of benefit in this disease. I cannot help but feel that the doctor has not given it a thorough trial, and believe, if used properly, it will prove a blessing to both patient and physician.

A LIPOMA REMOVED BY ICHTHYOL.

By JOSEPH SCHMIDT, M.D., BERLIN, GERMANY.

IN connection with the papers on ichthyol appearing in the June and July issues of the THERAPEUTIC GAZETTE, I beg to communicate to the profession the therapeutic effects obtained with ichthyol in a case of lipoma.

The following embodies the salient points of the clinical history of the case:

Uso von Berg, a medical student from Dorpat, aged 26, presented himself for treatment for some trivial gastric disturbance. While treating this gentleman my attention was directed to an ungainly lipoma of the size of a pigeon's egg, situated on the left side of the neck over the carotid artery. Inquiry elicited that the patient had had this tumor for the last eight years, and that no signs of any change in its size had presented themselves. He also admitted that he was very anxious to

get rid of the unsightly swelling, and that he had in vain used applications of the so-called interstitial absorbents, such as iodine and mercury. The proximity of the tumor to the great artery had always been regarded, both by himself and by the physicians of Dorpat, as a sufficient cause to interdict any surgical interference with the neoplasm.

I asked the patient whether he had ever heard of ichthyol and of its unrivalled absorbing power. Ichthyol was used in Dorpat, he answered, in the treatment of eczema, but he had never heard that the drug possessed absorbing qualities. I then told the patient that I had seen veritably astounding results in more than thirty cases from the application of ichthyol in infiltrations of the cellular tissues or of joints, and that I would like to try the new remedy on his lipoma. The patient readily consented, though candidly admitting his incredulity regarding any curative results.

I applied the fifty per cent. solution of the ichthysulphate of ammonium (obtained from Cordes, Hermann & Co., Hamburg) three times daily for ten successive days by thoroughly rubbing the drug into the part. As in all external applications of ichthyol, I washed the part previously with lukewarm soap-water, so as to open the pores of the epidermis and favor the absorption of the drug.

Sharing, as I did, the incredulity of my patient concerning the benefit to be derived from this novel treatment of a fatty tumor, the results obtained ultimately were naturally all the more surprising. On the first, second, and third days no alteration, either in size or consistency of the tumor, could be discovered, and physician and patient came wellnigh abandoning what appeared an utterly hopeless medication, when, on the fourth and fifth days, careful measurement and palpation revealed a distinct decrease in size and appreciable softening of the swelling. Stimulated by this promising improvement, the treatment was continued for six more days, each successive day marking a further decrease in size and a greater softening of the part. On the ninth day of the treatment the tumor had grown so soft that a fluctuation could be distinctly made out, and the size of the lipoma had so materially decreased that this fact was noted with surprise by friends of the patient wholly unaware of the treatment. On the same day a yellowish-white spot suddenly appeared on the top of the tumor, which rapidly expanded into a zone marked by great pliability and thinness. It was then clear to me that I stood before a singular pathological process: that

the thin yellow zone was evidently a suppuration focus, and that the drug had transformed a fatty tumor into a simple abscess about to open spontaneously.

I consequently withdrew the ichthyol applications, and treated the tumor as an ordinary abscess, *i.e.*, facilitated its impending spontaneous opening by the aid of the bistoury. My surprise, however, cannot be imagined when, scarcely having touched the part with the knife, a sero-purulent whitish mass gushed vehemently from the tumor, squirting over the room and clothing of both operator and patient. I then pressed the still remaining liquid with my fingers out of the abscess, extracted with the forceps the base and sides of the capsule of the former lipoma, and dressed the part with ichthyol adhesive plaster. On the twelfth day, after the plaster was removed, the part was found to have completely healed, and not the slightest trace of a swelling was left.

Shortly after the unique issue of the treatment of this case, I told Dr. Unna about it, who asked for the privilege to publish the case in his *Monatshefte für Dermatologie*.

In view of the above unprecedented result obtained with ichthyol in a case of lipoma, it would be very desirable to give the drug further trials in the direction indicated. The hope to cure by mere external medicinal applications what heretofore was only possible by the *ultimo ratio* of the knife, ought to prove a powerful stimulant for further trials.

USE OF BLACK HAW IN HABITUAL ABORTION AND OTHER UTERINE TROUBLES.

BY CHEVES BEVILL, M.D., WINFIELD, ARK.

IN 1878 my attention was called to the haw in a paper published in *New Remedies*, page 105, April, 1878. I first employed it in the case of a lady who had aborted three times. It was used from the third to the fifth month with her with good effect, and she went to full term, and since has borne two children without any inconvenience.

Besides this case I have employed the haw in sixteen cases of threatening abortion that I have notes of, besides seven others of which I have no record. Six of these patients had aborted from two to four times. In five of them the child was carried to full term. In one abortion occurred, but I do not think the drug was kept up long enough to have the desired effect.

Three of the sixteen had aborted once, and they all went to full term, and did well.

Of the remaining three cases noted of primiparæ two aborted, and I feel sure that too much time had been lost before they let it be known, and the membranes were broken.

In half of these cases I did not have the fluid extract of the haw, and had to make a decoction of the bark of the root, which I think is best. In giving the fluid extract I give from 30 to 60 drops from two to four hours apart, till all pains cease.

In congestive as well as obstructive dysmenorrhœa, I find it very beneficial, increasing the flow in the obstructive form,—*i.e.*, obstruction from clots and shreds plugging up the canal.

In after-pains it has acted well with me, causing the patient to rest well.

By its quieting effect on the contracted uterus at the menstrual epoch, black haw allows the flow to go on without causing the patient to suffer as much as she would without it; and, if given in sufficient quantities, I believe it will prevent abortion in almost every case where the placenta is not detached or the membranes broken. It has never, in my hands, affected the stomach enough to produce nausea.

ANALGESICS.

At the meeting of the Section in Therapeutics of the British Medical Association, the debate on analgesics was introduced by DR. SPENDER, in a paper rather too long for such a purpose, but full of interest (*Medical Record*, September 4, 1886). After some introduction, he said we come to close quarters with pain in neuralgia, calculus in the ureter, gall-stones, gout, etc., and patients demand relief at all cost. In such cases opium, or its alkaloid, still remained our chief agent. In supra-orbital pain, however, it was of little use, while 10 grains of quinine, followed by a few doses of 5 grains, would cure. Gelsemium or chloral were not to be compared in these cases, especially when, as usually, there is a touch of malaria present. Again, in night-pain in a syphilitic patient, analgesics of such a kind give only temporary relief, while iodides will, after a few doses, permanently remove the suffering. So salicin and arsenic are relatively indirect analgesics in other cases. Iron, in myalgia and neuralgia, has a similar relative value. Bromides only dispose to sleep, and in slight pain appear analgesic; but if the pain is sharp enough to baffle sleep, it defies bromides. They bring

the system into a placid state disposing to sleep, but if this is disturbed the analgesic charm is broken. He referred to doses, and illustrated the subject by the different effect in various quantities of tartar emetic, of opium, and morphine. Bleeding relieved vascular tension. Ergot raised motor force, and possibly sensation. He next urged that we economize our power by combining drugs, instancing morphine given with bromides, aconite with quinine, hemlock with several others, quinine with arsenic in herpes zoster, or with colchicum in gout, etc. He thought that, as surgeons have their instruments all in place, so as to find just what they want, so physicians should have a cupboard where all their analgesics could be seen in order at a glance, with hypodermic syringes and other means of employing them. He concluded with a recognition of physical analgesics, and the importance of recognizing not only the mental influence which by the sight of the dentist dismisses toothache, but the spiritual comfort which the presence of a wise, Christian physician may insensibly impart.

The PRESIDENT thanked Dr. Spender, and asked Dr. Brown-Séquard to follow.

DR. BROWN-SÉQUARD then gave an account of his discovery that a jet of carbonic acid gas, or of the vapor of chloroform, projected forcibly on the larynx, produced anæsthesia. Other agents will do it, but these are the best. After the larynx is thus anæsthetized the influence extends to other parts, and he has rendered animals insensitive to pain all over by this method. The effect lasts a long time, —twenty-four or even thirty-six hours,—and that without the least effect on consciousness or interference with any other function. He considered it due to an effect on the superior laryngeal nerve. When this nerve was divided, on one side there was no anæsthesia at all. He divided both and scarcely any effect occurred on either,—only just enough to be attributed to the other less important nerves.

The higher the scale of the animal, the greater the effect. He had tried to apply it to man and had succeeded on himself, but the effect of projecting CO₂ on the laryngeal membrane is so exceedingly disagreeable, he had found no one else able to endure it for a long enough time, and, of course, precautions must be taken to prevent its inhalation. He was still, therefore, searching for an agent suitable for use on mankind. Galvanism of the nerve sometimes acted in the same way, but was very uncertain, and therefore useless.

The Therapeutic Gazette

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Leading Articles.

REFLECTIONS ON THE PROPER USE OF INSANE ASYLUMS.

THE asylum with its various appurtenances for the treatment and protection of the insane is one of the greatest boons which modern scientific humanitarianism has conferred upon a suffering race. It is, however, possible for even a great gift to be abused through misunderstanding. We have sometimes thought that the asylum has become in the minds of many practitioners of medicine a sort of fetish, a mysterious something which has peculiar and inexplicable effects upon disordered intellects, so that any insane person who has not had the opportunity of shelter and treatment within the asylum, has, in the estimation of the physician, been deprived of his rights. On the other hand, among many of the laity, a sort of stigma attaches to the insane asylum, so that when a person is sent to an institution a sense of disgrace is felt by the whole family. This is, of course, utterly wrong, although it rests upon a very natural feeling. Insanity is such a dreadful thing and is so strongly hereditary, that every person shudders at the thought of its being in his or her family. The sending of a person to an

asylum is a public admission of insanity, which involves to some extent not only the unfortunate individual but also the immediate relatives and descendants. It may even interfere with the life prospects of the young of either sex, hindering the one in the obtaining of responsible positions, the other in the securing of marriage. Further, the going to an asylum often involves an increase of mental suffering, especially when the insanity takes the form of a mild melancholia. Whilst, therefore, the superintendents of asylums often complain that patients are sent to them too late, it seems to us that it is possible to err on the other side, and to send patients unnecessarily to an institution. This is especially true when there are abundant pecuniary means at hand.

Insane asylums are chiefly useful as a means of saving expense. Very few remedial measures are instituted within an institution which cannot be as well carried out away from the asylums. A raving maniac can be controlled as thoroughly in a private house as in the wards of an asylum. A melancholic can be diverted and soothed as readily in a country mansion as in a country madhouse. Very frequently it is essential for the insane person to be removed from his old surroundings and to be put under new influences, but such new surroundings and new influences can be readily found away from asylums. There are cases, it is true, in which the discipline of the institution seems to have an effect, the disordered intellect yielding to the influence of numbers about him, but even this influence can be obtained in small private retreats. The asylums exist, and are justified because by their means insane patients can be treated at a comparatively small cost. In various of our recent exchanges we have read articles claiming that the insane could be treated at their homes, and so written as to give the impression that their authors thought they had made a discovery!

When there is the power of obtaining first-class medical care, abundant nursing, isolation, and proper hygienic surroundings, in the majority of instances we believe that even better results can be obtained outside than inside of an institute, but no physician ought to undertake the treatment of a severe case of insanity unless he is thoroughly assured that the necessities can be commanded.

In the case of the chronically or hopelessly insane, the question as to the use or non-use of the asylum frequently requires very careful consideration. The sane as well as the insane have rights, and a mild lunatic in a

family may make the existence of a large number of persons so miserable that souls in purgatory would not change places with them. Under such circumstances, unless the afflicted individual has enough means to take care of himself away from his family, or rather to be taken care of away from his family, he should be sent to the asylum. Again, there is a class of monomaniacs, or partially insane persons, who simply cannot be controlled unless in confinement, or unless legal authority be given some one to enforce obedience. It is these cases especially which come into court, and are not rarely let loose upon themselves and upon a much-suffering community. We never heard of such a thing being done, but we cannot see why, in such cases, power could not be given to a suitable person to take charge of the half-insane individual, and by means of attendants control all his acts. Probably an alteration of the laws would be necessary in order to give the court such power, except in the case of those lunatics who have committed some crime. According to our understanding of the law of Pennsylvania a court may, in the case of a person acquitted of a crime on the ground of insanity, release him, after a longer or shorter sojourn in an asylum, upon bonds for good conduct given by some relative, and we suppose the person who gives bonds has authority over the one who is bonded.

THE DIURETIC ACTION OF MERCURY.

IN several of our previous issues we have referred to the interesting results obtained by Jendrassik and Stiller through the employment of calomel as a diuretic in cases of heart-disease. These authors, however, have been unable to explain the manner in which mercury produces its diuretic effect, but, as pointed out by Mr. F. S. Locke in the *Practitioner*, September, 1886, the recent work of Noel-Paton on the connection between bile-secretion and the formation of urea seems to have furnished the required clue. Noel-Paton has found that there is a direct relation between the activity of drugs as hepatic stimulants and their activity in causing increased formation and secretion of the most important nitrogenous waste products. Drugs, therefore, which cause an increased formation of bile also give an increased formation of urea, and give support to the fact generally held by physiologists, that the liver is the great seat of the formation of urea. Rutherford has proved that mercuric salts cause an increased produc-

tion of urea through the destruction of the red blood-corpuscles. As is well known, an increased quantity of urea in the blood acts as a powerful diuretic, and we there have a plausible explanation as to the manner in which calomel acts as a diuretic. If we acknowledge the fact that calomel is a hepatic stimulant, which, by the way, is denied by Rutherford, and can believe that all hepatic stimuli are increasers in the production of urea, we have thus the chain of argument completed as to the way in which calomel may be of use in heart-disease. The evident break in this train of argument is the contradiction as to the action of calomel on the liver. Mr. Locke, who agrees with the statement of Rutherford as to the fact that calomel is not a hepatic stimulant, thinks that the specimens used by Jendrassik and Stiller contained a trace of the per-salt, or that calomel is to a slight extent decomposed in the alimentary canal, the formation of the per-salt thus being suggested in order to explain the great cholagogue effect of the drug.

FURTHER NOTES ON THE YELLOWSTONE REGION.

IN the editorial which we published last month concerning the possibilities of the Northwest as a sanitarium, we recommended that a chemist be appointed by the United States Geological Survey to make a thorough chemical study of the waters of the Yellowstone Park. In our recent visit to the Yellowstone Park we found no chemist present, and took it for granted that this portion of the work had been overlooked, but we are informed that Professor Gooch was for a long while stationed in the Park with a proper chemical outfit, and that afterwards he supplemented his work on the ground by studies of residuums at Washington. As the thermal springs of the Yellowstone are to be numbered by the thousands, an absolutely complete analysis of them is almost impossible, but it is stated that the work of Prof. Gooch has been very wide-spread. The reputation of the professor guarantees that the analyses, so far as they go, are thorough and reliable, and we look forward with much expectation to the forthcoming volume.

The law does not permit the opening of new boarding-houses, or even the location of private dwellings within the Park, except under a special agreement with the government, and at present there is much complaint

that a large stock company has practically a monopoly of the keeping of hotels and the furnishing of transportation in the Park. Without the granting of peculiar rights, it is not probable that any individual or corporation would have undertaken the task of developing the resources of the Park or of properly providing for visitors, but when such rights have been given, the United States officials should certainly see that proper sanitarian and other arrangements are made for the reception and treatment of the sick at reasonable rates. Only the rich can afford the prices at present charged in the Park hotels, but the people of the United States will finally assert their rights to the curative powers of this great thermal region.

UNNA'S PLASTER MULLS.

THE name of Unna has within the last five years or so become familiar not only to those engaged particularly in dermatological practice, but also to the general practitioner. The readers of the *GAZETTE* are aware that the profession owes quite a number of important therapeutic innovations to Unna. Among these we mention the keratinized pill, the knowledge of the medicinal virtues of ichthyol, the paste pencils, the oily medicinal soaps, and last but not least the medicated mulls. The name of plaster mull has been given to a dressing consisting of a very thin sheet of gutta-percha, coated on one side with an adhesive substance containing one or more medicinal compounds, and backed on the other side with mull or undressed muslin. The name of salve mull also has been given to a similar kind of dressing, in which the medicaments are of a more soothing character, consisting of ointments having a basis of suet and lard, spread upon mull.

The local application of strong salicylic acid "plaster mulls" is strongly recommended by Unna in the treatment of lupus. In experimenting with a strong salicylic acid plaster mull to remove the cuticle and prepare lupoid tissue for other more destructive agents, Dr. Unna observed that salicylic acid itself exercises a most beneficial influence upon the new growth. The chief drawback is the great and lasting pain caused by salicylic acid when applied to a thin epidermis or raw surface. In order to overcome this various combinations were tried; cocaine failed to give relief, while opium and cannabis indica required an hour or two to develop their anodyne effects. The best results were obtained when genuine

beechwood creasote was combined with salicylic acid in the proportion of two parts of creasote to one of acid. Even then there is a painful stage lasting from ten to fifteen minutes, but a previous application of cocaine is sufficiently lasting in its effects to cover this period. The salicylic acid plaster mulls used by Dr. Unna were of five different strengths, containing respectively 10, 20, 30, 40, and 50 grammes of salicylic acid, and 20, 30, 40, and 50 grammes of creasote to each strip.

FAIR PLAY.

IN an exchange which has hitherto had the reputation of being a respectable journal, we notice a bitter editorial attack upon the journals whose publishers are in any way connected with drug houses. It is intimated that such journals are run for the purpose of bolstering up certain preparations, and are therefore unworthy of support from the profession. We have doubted somewhat the propriety of noticing such attacks as these, but as the *THERAPEUTIC GAZETTE* is the most prominent of such journals printed in the English language, and as the unwary may occasionally be misled, a few words are allowable.

The competition in medical journalism in the United States is so great that there is very little money to be made out of it. Indeed, we believe that most of the American journals either do not pay their editors at all, or pay them very insufficiently for the labor, or else are published at an actual loss. When a medical man is proprietor and editor of a journal, he takes what he gets out of it, and if a few hundred dollars results from his year's labor, claims that his journal is on a paying basis. A publishing house, if it desire the services of successful physicians as editors, must pay commensurate salaries, and thereby increase the expenses of the journal. Each of the large medical publishing houses in the United States has its own journal, which is of value to it partly as a direct method of advertisement, but more largely for its indirect influence. To be known as the publisher of a widely-circulated journal is to have a direct road to the notice of the medical profession. It is just as allowable for those who provide drugs as for those who provide books to open such a medium of communication with the profession. The advertisement columns of American medical journals are commonly under the control of the publisher of the journal. The book purveyor uses these columns for his

books, the drug purveyor for his drugs. The text of a journal is under the control of the editors, and whoever the publisher of the journal may be, the character of the text depends upon the ability and the independence of the editors. False book notices may appear in the columns of one journal, just as false accounts of preparations or drugs may be published in another journal. The reader ought to judge a medical periodical partly by the known character of its editors, but more largely by the results of his own perusal of its contents. It is especially in the latter way that the editors of the THERAPEUTIC GAZETTE desire its readers to judge of it. If a review of its columns since it came under the present management shows that these columns are free from articles especially devoted to the interests of its publishers, and are open and fair-minded in their criticisms and in their praises, then those journals whose failing circulation and general feebleness betray them into the bad habit of deriding their more successful rivals ought to be eschewed. The editors of this journal believe they have at times acted even unfairly in excluding articles whose bearing might be misrepresented, and have always in this been upheld by the publisher. The charlatanism and effrontery of the attack which we have just noticed is well shown by the following extract from the editorial in question, in which others are upbraided for praising their own wares, and a whining plea made for patronage, in asserting "the remedy consists in buying books from firms which make publishing their only business, and who are above the suspicion of catering to the interests of any advertising dodge."

ON TELEOTHERAPEUTICS.

THERE is no reason why in this age of the telegraph, the telephone, and the telescope, our old and venerable therapeutical science should not conform to the leading spirit of the day, and introduce a perfectly seasonable teleotherapeutical departure. We have all the respect in the world for the savants constituting the "Congrès de l'Association française pour l'Avancement des Sciences," but we cannot say anything else than "credat Judæus Apella" to the paper read by Drs. Burot and Bourrie at the recent meeting of the Congress in Grenoble (*vide Archives de Pharmacie*, September 5, 1886). The statements of these gentlemen concerning the effects of drugs upon hypnotized per-

sons clearly exceed the limits of faith of even the most liberal medical editor. Burot and Bourrie affirm in their paper that sick persons in the state of hypnotism become very impressionable to the action of many substances, especially of medicines, so that these will produce their characteristic effects by only placing them in well-stoppered bottles within a certain distance of the patients.

These statements met with a good deal of incredulity (no wonder), and Dr. Luys was requested to examine the subject and report upon it. Strangely enough, Luys fully confirmed the observations of the two first-named gentlemen. Luys said he could produce nausea and vomiting by simply placing a sealed tube containing one or two grammes of powdered ipecac, without any previous notice, behind the neck of the hypnotized person. The effects produced, which include convulsions, paralysis, hallucinations, etc., are said not only to vary with the substance, but with the point of contact, so that certain substances will produce different emotional expressions, according as they are placed on the left or right side of the patient. M. Luys concludes that medical men have thus placed within their reach a new method of treatment in nervous disorders, and he states that in this way he has obtained a distinct diminution of convulsive attacks in two patients suffering from hysteronepileptic convulsions.

We are desirous of hearing more of this interesting subject. Possibly we may become converts yet.

Reports on Therapeutic Progress.

THE USE OF RESORCIN IN GASTRIC AND CUTANEOUS DISORDERS.

At the recent meeting of the British Medical Association in Brighton, DR. EDWARD MACKEY read a paper with the above title in the Section in Therapeutics. (*Medical Record*, September 4, 1886.)

He drew attention first to its antiseptic properties, pointing out that a two per cent. solution retards putrefaction, but does not irritate the tissues. Sometimes a five per cent. or even a ten per cent. solution may be employed, but then considerable irritation may be excited, while the weaker lotions are generally effectual. Internally he had usually employed 5-grain doses. It is not nasty, but the taste is easily tolerated by almost all patients. He usually gave it in water, with a

little glycerin, or in chloroform water ; doses of 20 or 30 grains have been given, but they give rise to febrile disturbance, while from 30 to 60 grains cause giddiness, prostration, anxiety, collapse, and unconsciousness. He therefore did not approve such doses. It was quite true that full doses lower the temperature, but the effect is only temporary and of doubtful advantage, so that resorcin may be said now to have passed out of the list of antipyretics. Two cases of gastric ulcer, treated in the County Hospital, with 5-grain doses three times a day, began to improve as soon as the resorcin was taken, and completely recovered under the treatment. In one of these anæmia was so extreme that he had resorted to hypodermic injection of dialyzed iron, as employed by Da Costa. Twelve cases of gastric catarrh among the out-patients of the hospital, varying in age from twenty-seven to fifty, all of whom had been vainly treated by bismuth, magnesia, soda, prussic acid, and the usual prescriptions, soon got better under 5-grain doses of resorcin *ter die*. The drugs seem to stimulate and disinfect the mucous membrane. In children's diseases he had not found it so successful ; he had given it in doses of 2 and 3 grains in children, but found that it neither relieved diarrhœa nor disinfected the evacuations. In skin-diseases it was a valuable parasiticide ; a ten per cent. solution sometimes relieved psoriasis. On ulcerating mucous surfaces it improved the condition and disinfected the discharge, as, for example, in otorrhœa.

MR. WILBERFORCE SMITH said that it seemed to act like carbolic acid, and he would like to ask whether the author had separated the effect from that of physiological treatment, which was often so effectual ?

DR. MACKEY replied that he had already pointed out in the paper the differences between resorcin and carbolic acid, the most important being that it was decidedly less irritant. As to physiological treatment, of course his two in-patients had the benefit of rest, proper diet, and hospital care ; but among the out-patients there was little opportunity for securing such benefit, and all that could be done in such cases was to give physic, as the patients could not, as a rule, comply with other directions.

GINSENG.

Ginseng is a drug about which not a little has been written, but concerning which not much is known, at any rate not sufficient to

explain the high estimation in which it is held by the Chinese. Another contribution to its literature has recently been made by MR. FOULK, United States consul to the Corea, from which country the most valued varieties are derived. Mr. Foulk says that the plant is cultivated in the Corea, and that the ginseng is of two kinds, the red ginseng (heng-lum) and white ginseng (pak-lum). Both kinds, however, are from the same plant, the white ginseng being the root simply washed and dried, and the red the root after having been submitted to a process of curing. This process consists in prolonged steaming and dyeing, cold water being dashed over it at the end of the operation, which solidifies the root, the fracture becoming glossy and brittle, while its color is changed to a fleshy pink. The curing is a monopoly of the government, red ginseng not being an article of ordinary trade, but the whole of the crop being carried to China, and the proceeds of sales going to the king ! White ginseng is used enormously in the Corea as a strengthening and blood-purifying medicine, the natives preferring it to the red, which, they say, loses strength in the curing. The most esteemed ginseng should consist of the roots of wild plants at least thirty years old, and commands fabulous prices. Mr. Foulk says that from personal experience and observation he is satisfied that ginseng is an active strongly heating medicine, but caution is required in its use, as it sometimes causes boils and eruptions, sleeplessness, and flushing of the body. It is most commonly taken in the form of a concentrated infusion, but sometimes the sliced fresh root is eaten with honey. Notwithstanding the general impression among Western nations that the virtues attributed to this drug are imaginary, Mr. Foulk thinks the evidence is in favor of the mystic value having been attached to it after its virtues had been practically ascertained. Some yellowish specimens that are met with occasionally appear to be imperfectly cured red ginseng.—*Pharm. Journ. and Trans.*, August 28, 1886.

THE TREATMENT OF SUMMER DIARRHŒA OF INFANTS.

In the summer diarrhœa of infants, the fever, when present in considerable degree, is by long odds the most dangerous symptom, and this DR. H. C. HAVEN (*Arch. of Pediatr.*, July, 1886) believes to be best overcome by cold water applied by stripping the infant, laying it upon the blanket, and covering with

a sheet wrung out first in water of say 95° F., and changing the sheet every five minutes with one in which the water is gradually reduced to about 60° F. This application relieves the irritability of the nervous system; it supplies through the skin the water that has been lost from the intestines, and thus relieves the heart. It causes derivation to the skin, which can be intensified by the addition of rubefacients; this again relieves the heart and internal organs by restoring the equilibrium of the circulation. It spares the stomach and intestines from the additional irritation of an antipyretic drug. Antipyrin hypodermically or by the mouth may prove its equal; it is certainly the best substitute we have at present.

In the early stages, or even the approach of the state of collapse, opium is a most important adjunct to treatment. The bromides will often take its place, but their action is slower and possibly more depressing in the end. The study of the pulse and auscultation of the heart are necessary in addition to determine as to the time and amount of the use of alcohol and of digitalis, and other cardiac tonics and stimulants. Digitalis is a drug which, if employed rationally, is of great value, not only in this but in all diseases of infancy accompanied by a cardiac weakness. Nutrition must also be kept up if possible on account of its influence on the general condition. It must not be forgotten that food may be the initial irritant, either from changes which have occurred in it previous to digestion, as acid fermentation and putrefactive change, or subsequent to ingestion, as further fermentation, incomplete digestion, etc. Milk is the usual food of such infants, and Dr. Haven believes that the fermentative changes in the milk, which is a fluid undergoing such changes with the greatest rapidity, are the most important etiological factors; as a consequence, the first step in the treatment of this affection is to withhold milk entirely for a longer or shorter period. Its place may be taken by sugar in simple solution, white of eggs in solution in water or fresh beef juice, or the two latter combined; barley water may furnish the necessary sugar, or one or the other of the different malt foods may be employed. Fat can be dispensed with, or may be given by inunction, or, later, in almost infinitesimal doses of some sweet emulsion of cod-liver oil. The use of an alkali is further an important point in the treatment of all severe cases characterized by an acid condition of the intestinal tract. Of alkalies, Dr.

Haven prefers the sodium salts, especially the benzoate or the bromide, if there is irritability of the nervous system, or the salicylate may be used for its anti-fermentative properties. The use of the latter salt has been especially recommended in this affection by Dr. A. Shank in the same number of the above journal.

*THE TREATMENT OF SYPHILIS BY
SUBCUTANEOUS INJECTIONS
OF MERCURY.*

MR. J. ASTLEY BLOXAM (*Lancet*, August 21, 1886) recently delivered a lecture on the excellent results which he had obtained at the Lock Hospital and elsewhere in the treatment of syphilis by intra-muscular injections of a solution of the perchloride of mercury. The solution for injection contains six grains of the perchloride to the ounce of distilled water, and should be made fresh for each *stance*. Since he had adopted this method, now a period of some eighteen months, upwards of fifteen hundred cases had been treated with the best results. The sore generally begins to heal very promptly after one or two injections, the secondary symptoms are markedly modified, and, after a course of treatment extending over a year, more or less, the patient is enabled to discontinue his attendance. Towards the latter end of the course of treatment the injections may be given less frequently, and, as a general rule, not more than from eight to twelve grains of the perchloride are injected in all. It is undesirable to repeat the injections oftener than once a week, as otherwise salivation might be induced, and the quantity injected each time (one-third of a grain) is found to be quite sufficient until the next time. There are several advantages attending this method of exhibiting mercury. In the first instance, it is only necessary to see the patient once a week, when sufficient mercury is injected to last until the following week; secondly, salivation is not produced, as when the patient continued to take mercury for a whole week away from the supervision of his medical attendant; thirdly, the gastric derangements which are so apt to follow the administration of mercury by the mouth are by this means avoided; lastly, the ease and certainty of the administration, which enable the surgeon to do his own dispensing with a minimum of trouble. A little quinine is generally given during the course as a tonic, but no other form of mercury is administered.

The injection itself is a very simple opera-

tion, but certain rules have nevertheless to be observed in order to obviate any inconveniences which might otherwise result. An ordinary glass hypodermic syringe is used with a fine needle (the needle is apt to become very brittle from the action of the mercury on the steel, and requires to be replaced from time to time), containing twenty drops of the solution, equivalent to one-third of a grain of the perchloride. After filling the syringe, the needle is freed from adhering solutions by washing in order to avoid irritation in its track, and is then plunged deliberately into the muscular tissue of the buttock, selecting for this purpose the spot corresponding to the muscular mass of the glutei into the substance of which the injection is made. If this precaution be observed, no discomfort or abscess formation follows, the only solitary case in which this has occurred being attributable to the injection having been made into the areolar tissue over the trochanter. The pain of the injection is but slight, and soon passes off. It is desirable that the patient should not take active exercise immediately after the injection, as it has been noticed that blood may be effused at the point of injection, giving rise to the sensation of a severe bruise of the part, which lasts for several days. The same effect has followed the puncture of a large vessel, but in any case the result is only transient, and disappears after the lapse of a few days. If for any reason the buttock be objected to as the site of the operation, the injection may be made into the trapezius muscle at a point two inches above the superior angle of the scapula, but the injection into the buttock is attended with less inconvenience.

Mr. Bloxam mentioned that his own opinions were strongly in favor of syphilis being bacillar in origin, thus accounting for the specific action of mercury in the treatment of the disease. In support of this view, he alluded to the remarkable researches of Messrs. Eve and Lingard, whom he had furnished with blood and chancrous tissue from patients at the Lock Hospital, the subjects of syphilis.

THE NIGHT-SWEATS OF PHTHISIS TREATED BY SECALE CORNUTUM.

MINGOT reports in the *Journal de Médecine de Paris* (July 4, 1886) as to the unexpectedly favorable results obtained with secale cornutum in the night-sweats of phthisical subjects. He observed in Tenneson's clinics at Paris that 15½ to 31 grains of ergot given in powder

form, or, better, 2 fl. dr. of ergotinine injected hypodermically half an hour previous to the expected appearance of the sweat, could suppress the latter for a week or even longer. No other of the numerous remedies recommended against night-sweats was, save atropine, found to have so great an effect as ergot or ergotinine. To be sure, the tubercular process is in no way influenced by the exhibition of this remedy, but it is gratifying to be able to stay one of the most annoying, and at the same time weakening, factors of the disease.

SOME NEW USES OF SOME OLD DRUGS

DR. JOHN H. JONES (*New York Med. Journal*, August 21, 1886) recommends the following uses of some old-time remedies which have proved very effectual in his hands:

I. *The inhalation of ether in non-expansion of lung*, due to adhesions of pleural surfaces, occurring after pleurisy with purulent effusion, in apneumotosis of children, and asphyxia neonatorum.

After absorption or artificial evacuation, we frequently find that a long-continued effusion in the pleural sac is followed by destructive changes in the corresponding lung. Many remedies have been tried with the object of expanding the air-vesicles and preventing the occurrence of carnification, but with unfavorable results. The most effectual treatment heretofore has been that of breathing compressed or rarefied air. But by far the best method, in Dr. Jones's experience, is inhalation of ether. He has used it on three patients with very flattering results, and can confidently recommend it to the profession as the best means of dilating the air-vesicles and restoring the lung to its natural state. If the adhesions have not been of too long standing and are not very dense in structure, they will certainly yield, and, once overcome, will be permanently obliterated. A careful mapping out of the area of dulness should be made prior to administering the anæsthetic, and, if it is found that it is not appreciably diminished after two or three administrations, it will be an indication that re-expansion is hopeless. Often, however, one administration will suffice. It is undesirable to push the anæsthetic to complete narcosis. It should be discontinued after the stage of excitement has been reached.

Its inhalation is sometimes serviceable in the capillary bronchitis of children, when we suspect that one or more of the smaller bronchi

have become impervious. It is true that counter-irritation to the affected area and emetics are frequently successful in overcoming the obstruction; but, when asphyxia seems to be progressive and is accompanied by asthenia, emetics are too depressing, and their action cannot be relied upon. Under its use the heart's contractions are strengthened, and a violent anti-respiratory (forced expiratory) action is set up, which frequently is sufficiently powerful to dislodge the offending secretion.

Dr. Jones also recommends the use of ether in the asphyxia of newly-born infants. It will sometimes succeed when artificial respiration fails. A few drops may be placed upon a piece of absorbent cotton and held to the nostrils. A better method is, after the nares have been cleansed of mucus, etc., to insinuate into either nostril a camel's-hair brush previously dipped in ether, and, by titillating its mucous membrane, we, in addition, summon to our assistance the benefit of reflex action.

II. *Bichloride of mercury and tincture of belladonna in membranous croup.*

Dr. Jones has for some years been in the habit of treating this disease with a combination of corrosive sublimate and belladonna. These drugs are recommended for this complaint in almost every work on therapeutics; but he believes that they have never been given conjointly. He has found that small doses of the bichloride ($\frac{1}{10}$ of a grain), administered in conjunction with tincture of belladonna (2 to 5 minims), every half-hour, for a child 2 years old, is a very successful method of dealing with this dangerous disease of childhood. The secret of its success is in its persistent administration, even when the symptoms are apparently most unfavorable. It is advisable to commence the treatment by administering an emetic, so as to dislodge the already-formed membrane. Probably much of the benefit derived from this mixed treatment is due to belladonna, and it is astonishing what large doses of this drug children can tolerate. During the progress of the disease the strength must be maintained by a liberally nutritious diet and stimulants, for when recovery takes place, the patient is left very anæmic and weak. This is not very apparent while the medicine is being given, as every evidence of it is partially masked by the physiological effects of the belladonna.

III. *Belladonna in sterility of females.*

There are few drugs which exhibit so pronounced a predilection to act upon certain

structures of the body as belladonna. Among its favorite tissues, those of the female sexual organs may be mentioned. Its employment is followed by more or less benefit in every disease to which these parts are liable. Apparently many sterile women enjoy the best of health, and have never suffered from any irregularity of the sexual apparatus. To such he has on several occasions prescribed belladonna internally, and has found that, after taking the medicine for some weeks, they became pregnant.

ON THE PHYSIOLOGICAL AND THERAPEUTIC ACTION OF ETHOXY-CAFFEINE.

In a previous issue our readers found a review of the results and conclusions arrived at by Drs. Dujardin-Beaumetz and his pupil Pineau concerning ethoxycaffeine (*vide Bulletin de Thérap.*, March 30, 1886). In a recent issue of that journal (September 15, 1886), DR. CHABOT publishes another paper on the physiological and therapeutic action of the drug, which is worthy of our attention.

Ethoxycaffeine belongs to a series of derivatives of caffeine, which were prepared by Fischer, and examined as to their physiological properties by Filehne, of Erlangen. This observer showed that the physiological properties of the caffeine derivatives (hydroxycaffeine, diethoxy-hydroxycaffeine) were modified in proportion to their atomic formula, and that their degree of activity is greatly inferior to that of caffeine. The study of these bodies may be interesting enough from a chemical and physiological point of view, but the therapeutical science can, it seems, profit but little from them. Ethoxycaffeine, however, although nearly the counterpart of caffeine as to physiological action, presents, nevertheless, certain new and important features, insuring for the drug *à priori* a certain rank in our pharmacal treasures. The drug is undoubtedly a hypnotic. The experiments of Filehne have first established this fact, and the later researches of Chabot confirmed it. Ethoxycaffeine acts in the first place on the nervous centres (somnia, augmentation, diminution of reflexes), then causes paralysis, and finally muscular rigidity. The circulation remains nearly unaltered.

From his researches Filehne draws the conclusion that "if you add to caffeine the group ethoxyl (OC_2H_5), the affinity of this chemical becomes greater for the central nervous system, and weaker for the muscular system."

Chabot has taken especial pains to verify this interesting observation.

Knowing that on injecting into a muscle a solution of caffeine the former assumes very rapidly a state of rigidity, Chabot injected successively into the muscles of the thigh of several rabbits solutions of caffeine, of ethoxycaine, and of salicylate of sodium. The experimenter examined in especial the action of the last-named substance, so as to avoid all sources of error. The following was the formula for the solutions employed :

R Salicylate of sodium, 0.25;
Caffeine, 20;
Distilled water, 3 c.c.

The injection into the muscles was performed with 4 drops of these solutions.

These experiments yielded the following results: The muscles became rigid in two to three minutes when caffeine was used, and in eleven to sixteen minutes when ethoxycaine was used. If the latter drug is used, the muscular rigidity is accompanied and preceded by certain general characteristic symptoms. The lively disposition of the animals subjected to the action of caffeine contrasts most conspicuously with that of the animals treated with ethoxycaine; in the latter animals the rigidity is preceded by paralysis.

Another fact established in these experiments by Chabot is also noteworthy. When the animals were treated with ethoxycaine the respiration slackened progressively at the end of three to ten minutes, while caffeine produces nothing like that. Of course there is nothing remarkable in the fact that a substance like ethoxycaine, which acts so energetically on the central nervous system, modifies also the vitality of the respiratory centre.

Filehne terminated his valuable paper by saying that the sedative and hypnotic action of ethoxycaine allowed us to hope that the drug would be of value in the treatment of megrim, especially in the cases treated previously with caffeine with some success. Dujardin-Beaumetz administered ethoxycaine to six patients. The drug, insoluble in water, was given in doses varying 0.25 to 1 gm. The following is the routine formula of the French therapist :

R Ethoxycaine, 0.25;
Salicylate of sodium, 0.25;
Hydrochlorate of cocaine, 0.10;
Linden-water (eau de tilleul), 60.00;
Syr. cappillaire, 20.00.

The cocaine was introduced into this for-

mula in order to counteract the stomachic pains which ethoxycaine occasionally produces.

In the first case, that of a man aged 52 years, suffering from a very painful zone, 1 gm. of the drug was given in five doses at half-hourly intervals, with the result of producing sleep, which the preceding injections of morphine were unable to procure.

The second case was a nervous and anæmic woman, suffering from an almost continuous cephalalgia, combined with insomnia. She took 50 cg. in five doses. The last doses produced some nausea and vomiting, but the woman enjoyed a sound sleep, though previously opium was required to produce some slight rest.

In the third case, the drug again caused nausea and vomiting, but was productive of sleep.

Another patient of Dujardin-Beaumetz, being extremely troubled with megrim, took 1 gm. of ethoxycaine in two doses, and soon felt sensations of malaise and nausea; in a little while sleep set in, lasting for two hours. In the afternoon the patient felt so much relieved that he could devote himself to an absorbing work. In the evening the megrim returned, violent but wholly altered in its features.

Chabot made the following observations with the drug on patients: A friend of his affected with violent and frequently returning paroxysms of megrim, received the drug in the dosage and combination referred to above. Vomiting soon set in, but disappeared equally soon. Then the patient felt a sensation of general excitation, an intoxication with some slight vertigo, and an indomitable desire for motion. All these symptoms, however, soon passed off, and the patient felt so greatly relieved that he spent the afternoon visiting the Salon de Peinture. In the evening the headache reappeared.

Our observer also gave ethoxycaine to a young lady of 26 years of age, in whom the paroxysms of megrim returned two or three times a week. The patient could not attend to her duties, vomited often during the paroxysms, and was about to fall into a hopeless condition of anæmia. In spite of several relapses, Chabot succeeded in suppressing these paroxysms by the aid of ethoxycaine. The nausea rapidly disappeared, then the headache itself grew feebler, and at the end of two hours there was nothing left but a dulness in the head. These are the clinical results obtained hitherto with the drug. Any final conclusion

would of course be premature, though it seems as if the drug is destined to be serviceable in certain forms of cephalalgic neuralgia.

GALIUM APARINE.

Sir William Hooker and Dr. Arnott, in their "Field Book of British Plants," enumerate fourteen families of the genus "galium," of the natural order Rubiaceæ.

The genus takes its name from *γαλα*,—milk which some members of the genus are used to curdle.

They have square stems, leaves in whorls. The predominant colors of the flowers are yellow and white.

The *Galium aparine*, commonly called goose-grass or cleavers, according to DR. GEORGE FOY (*Med. Press*, June 16, 1886), is one of the best known of the genus, and has long been used as a popular remedy for scrofula, cancer, and to stay bleeding. It is mentioned as a remedy for scrofula and hemorrhages by Paulus Ægnieta, and as an aphrodisiac by Dioscorides. Among the Arabian physicians Avicenna, Rhases, and Eben Baither recommended it. Culpepper, Quincy, and Lewis include it in their list of therapeutic agents, and Dr. Robert Hooper (*Dict. Med.*) mentions its use as a remedy for cancer to condemn it. The popular use of *G. verum* as a styptic is mentioned by Gray; but, although he names the *G. aparine*, he does not say if it has any medicinal value.

The plant is very common in English hedges. It flowers in June and July, and has a pretty white flower, and is easily recognized by its globular seed-like bodies with hooked prickles, by which they adhere to the skins of animals, and so become widely dispersed. Its introduction to modern practice is due to Dr. Winn, who, in 1854, read his paper on "Galium Aparine" before the Medical Society of London. His attention was first drawn to the plant by a patient who had long suffered from lepra vulgaris, and had taken all the usual remedies in vain. He informed Dr. Winn that he had at last discovered a remedy for this troublesome complaint in a common wild plant of which he did not know the name. Dr. Winn found the plant to be *Galium aparine*, and, on making inquiries, learned that three other persons in that district had been cured by the same remedy. Dr. Winn tried it in nineteen cases of skin-disease,—five were cases of lepra, six of psoriasis, four of eczema, two of lichen, one of inflamed acne, and one of ordinary colored syphilitic eruption. In

nine of these cases the benefit derived from the medicine was very striking. Dr. Bully, of Bucks Hospital, forwarded to Dr. Winn an account of three cases of cancer in which the *G. aparine* appeared to exercise an influence in checking the disease. The preparation used by Dr. Winn was an inspissated juice in ʒiv-doses three times a day. A formula for an infusion and ointment is published in Beasley's Pocket Pharmacopœia.

Eight years after Dr. Winn's paper Dr. Ogle recommended the drug as a remedy for epilepsy, and quite recently Surgeon-Major Orwin draws attention to the benefit derived from its use in an obstinate case of psoriasis of the left hand of twelve months' standing, after crysophanic acid, tar ointment, arsenic, etc., had been tried in vain. The rash disappeared by the use of *G. aparine* taken as an infusion and externally applied as a poultice. As there is no difficulty in securing a supply of the fresh plant, and its time of flowering, which will allow of its easy recognition, being near at hand, it would be advisable to submit the plant to a fair trial, and if found worthy of a place in our list of remedies, its inexpensiveness and habitat should not be allowed to militate against its use.

HAMAMELIS VIRGINICA IN HÆMOPTYSIS AND OTHER AFFECTIONS.

DR. A. BRONDEL writes to the *Bulletin Général de Thérapeutique*, September 15, 1886, as follows:

"Last year I saw Dr. Boucommont arrest before my eyes two hæmoptyses by means of the fluid extract of hamamelis in doses of 40 to 60 drops repeated three times *pro die*.

"I have employed the same extract successfully in pulmonary congestions, which yielded with admirable promptness to the daily ingestion of 3 to 4 teaspoonfuls of the remedy.

"Besides, I have frequently given and taken myself the extract in the beginning of inflammatory conditions of the larynx or trachea. Combining the extract of hamamelis with aconitine, I could in the latter affection produce a rapid cure.

"In the initiatory phases of rheumatism an hour after absorption of the remedy a marked relief and resolution of the inflammation will take place."

PHYSIOLOGICAL ACTION OF VANILLIN.

According to DR. GASSET, vanillin, which gives the aroma to vanilla, belongs among

the aromatic aldehydes (aldehydes benzoic, cinnamic, etc.). Many cases of poisoning occur among workers in vanilla and persons who have eaten foods containing vanilla. These are due to vanillin. According to experiments made on frogs, vanillin has a convulsive action, exercised principally on the spinal cord; this convulsive action is succeeded by depressive action, exerted equally on the spinal cord and motor nerves; the sensory nerves remain unaffected. Vanillin has a local irritant action. Hypodermically injected into dogs it raises the temperature half a degree. In frogs, $\frac{1}{4}$ to $\frac{1}{10}$ of a grain is a poisonous dose; the toxic dose for higher animals has not yet been determined. Vanillin checks putrid fermentation, and in its physiological properties seems to be a diminutive strychnine. Its best physiological antidote or antagonist is chloral hydrate.

It may be used with advantage as a gastric stimulant, especially in atonic and fermentative dyspepsias. In $\frac{3}{4}$ -grain doses it may be used as a corrigent for remedies badly borne by the stomach. In case its excito-motor properties are desired, it may be administered in a gummy vehicle in 3- to 3½-grain doses. — *Western Druggist*, September 4, 1886.

THE USE OF COCAINE IN THE HYPODERMIC TREATMENT OF SYPHILIS.

The pain attending the hypodermic treatment of syphilis, no matter whether calomel, corrosive sublimate, the cyanate or formamidate of mercury is used, is a serious drawback to another equally efficient as convenient mode of medication. This objection becomes especially appreciable in cases where the hypodermic method of treatment for various reasons cannot be supplanted by any other, particularly the inunction cure.

MANDELBAUM reports in the *Monatschrift für Praktische Dermatologie*, 1886, No. 6, two such cases, ladies, in whom, for certain reasons, the treatment had to be kept secret. These patients could be best attended to after office-hours at the physician's residence, the cyanate of mercury being injected according to the requisites of the case. Unfortunately, they proved so susceptible to the pain connected with the operation that the injections had to be abandoned. Induced by the publication of Wölfler of the anæstheticizing action of cocaine injections, Mandelbaum tried the following combination with the greatest success:

R Cocain. muriat., 0.05;
Hydrarg. bicianid., 0.01;
Aque dest., 1.00. M.

S.—For hypodermic use as one dose.

At first Mandelbaum injected the cocaine solution first, and then, after two or three minutes, the mercury; later he found the simultaneous exhibition of cocaine and mercury to be more convenient and equally effective.

The assistance of these cocaine injections recommends itself also in the use of other hypodermically applied drugs, with the view to eliminate the attending pain.

THE INGREDIENTS OF DIGITALIS.

A short time since, in a communication to the Academy of Medicine, M. LAFON called attention to the differences in the characters of the substances supplied by manufacturers under the name "digitalin," and whilst claiming that the articles supplied by French makers correspond to the requirements of the Codex, of being freely soluble in chloroform, only slightly soluble in ether, and giving a green color with hydrochloric acid, and are therefore really digitalin, implied that German makers always send out something else under the name. This charge has induced the firm of E. Merck, of Darmstadt, to issue a reclamation, containing some interesting information which may be worth putting on record. In the first place it is recalled that Schmiedeberg, in his classical research (*Pharm. Journ.*, v. 741), showed digitalis leaves to contain (1) digitonin, a substance resembling saponin in its properties, without the specific digitalis action, and soluble in water; (2) digitalein, an amorphous glucoside soluble in water; (3) digitalin (Schmiedeberg's), a crystallizable glucoside, insoluble in water; (4) digitoxin, insoluble in water, a non-glucoside, but passing under treatment with an acid, without splitting off of glucose, into toxiresin; and (5) digitin, or passive digitalin, an inert crystalline body. These individual substances are said to occur in different proportions in commercial "digitalins," which would therefore vary accordingly in their therapeutic action. The principal commercial preparations are thus described: (1) "Digitalin, pur. pulv.," or "German digitalin," consists principally of digitalein, with some digitonin and digitalin. Digitalein in consequence of its ready solubility in water is not cumulative in its action, and causes no irrita-

tion when subcutaneously injected. Freely soluble in alcohol, and insoluble in ether and in chloroform. (2) "Nativelle's crystallized digitalin." Physiologically extremely active. In fine white needles, bitter in taste, insoluble in water, ether, and benzol, freely soluble in chloroform. Consists almost entirely of digitoxin, and is cumulative in its action. Typical of French digitalin. (3) "Homolle's amorphous digitalin." White or yellowish-white, very bitter powder, slightly soluble in water and in ether, freely soluble in ninety per cent. alcohol and in chloroform. Consists principally of digitalin with some digitoxin. (4) "Digitalin, pur. pulv. (Merck)." Yellowish-white powder, corresponding in its properties with No. 1. Merck also prepares (5) a "crystallized digitalin" identical with digitin, difficultly soluble in water, more readily in alcohol, and insoluble in ether and in chloroform; as well as (6) "digitoxin," the most poisonous of all the digitalis bodies, cumulative in action, crystallizing from alcohol in concentrically grouped needles, freely soluble in chloroform and in alcohol, and sparingly soluble in ether. Further, the amorphous "digitalins" of the Codex and the Belgian Pharmacopœia are said to consist essentially of digitalin, with some digitoxin, and to correspond to Homolle's amorphous preparation. —*Pharm. Journ. and Trans.*, August 28, 1886.

THE PHOSPHATES IN THERAPEUTICS.

LOGEAIT writes in the *Archives de Pharmacie*, September 5, 1886, the following concerning the value of phosphates in the treatment of diseases:

The medicinal worth of the phosphates of lime has hitherto been singularly overrated. The triple phosphate of lime, the biphosphate and monophosphate (acid phosphate), as well as the other principal preparations, such as the chlorohydrophosphate, lacto- and citrophosphates, are gradually disappearing from the field of practice, their places being occupied by the phosphates of potassium and sodium. Very recent observations have yielded the fact that the action of the phosphates of lime is exceedingly uncertain and doubtful, as they cannot be absorbed in the economy. No doubt, says Logeait, the soluble phosphates of lime remain dissolved as long as they are in the stomach, and the insoluble preparations become dissolved by the action of the gastric juice; but as soon as they have passed into the duodenum, the alkaline bile precipitates them at once, and renders them insoluble

again. Hence through the greater part of the entire intestinal tract they act as totally inert matters, and are finally rejected with the rectal discharges.

It is different, however, with the phosphates of potassium and sodium, which are equally soluble in acid, alkaline, and neutral menstrua; they remain dissolved during their entire passage through the digestive channels, and are consequently resorbable.

The absorption of phosphates of lime is by no means indispensable to the explanation of the formation of osseous tissue. We can logically presume that the soluble salts of lime alone are absorbed, which precipitate neither in an acid nor an alkaline medium.

These salts meet, in the deeper channels of the economy, the phosphates of sodium and potassium, arriving with the same conditions of solubility, and form thereby double decomposition phosphate of lime.

URINARY INCONTINENCE OF CHILDREN TREATED BY ANODYNES PER RECTUM.

It is safe to say that the modes of treatment usually recommended for this distressing infirmity are frequently ineffective and disappointing. In the *Boston Medical and Surgical Journal*, September 16, 1886, DR. EDWARD T. WILLIAMS states that for the last year or two he has been employing, with complete success thus far, the use of anodynes by the rectum in the form of injections, suppositories of morphine, belladonna, and atropine, and he states further that he has not only cured six cases by these means, but temporarily relieved many more who have passed out of sight during treatment. He finds that morphine alone relieves for the time being, but does not cure. Belladonna and atropine are curative when taken long enough, although he finds them to be better borne in combination with a little morphine, which counteracts some of their bad effects and enables them to be given more continuously. Furthermore, the requisite dose of belladonna is smaller when combined with morphine. When these medicines produce headache or undue nervous excitability, he uses the bromides as a corrective or suspends their administration for a time. He has found no case where they could not be borne when properly given.

As to the mode of administration, a fifteen-grain suppository of cocoa-butter is most easily handled. They should contain a proper amount of extract of belladonna and morphine. For a child 5 years old, say, one-

eighth of a grain of belladonna extract, and one-sixteenth grain of morphine; but the doses must be carefully adapted to the particular case in hand, beginning with a small dose, with a smaller relative proportion of belladonna, and increasing the latter and diminishing the morphine as toleration becomes established.

If an enema or clyster be preferred, it should consist of about a drachm of lukewarm water, with a few drops of atropine and morphine solution added, and administered with the small hard-rubber syringe (No. 2), especially designed for the purpose. The old-fashioned clyster of starch-water and laudanum is absurdly out of date. Dr. Williams has used nothing for years but morphine and warm water, mixed as for a subcutaneous injection, only that the water should be tepid and not exceeding a drachm in amount. Dr. Williams uses two solutions. The first consists of one-sixth grain of morphine and twenty minims of water. The dose by drops therefrom is the same as that of laudanum, which makes it especially convenient for the nurses. The other is one-sixtieth grain of atropine to twenty minims of water. Reckoning one-sixtieth of a grain as an average commencing dose for an adult, the dose for a child may be graduated by drops precisely as with laudanum. For a child 5 years old, then, as an enema, one might give for a commencing dose from 3 to 5 drops of each solution, mixed with a teaspoonful of warm water. These doses may be differently combined or altered in any way to suit a particular case.

PIPER BETEL LEAVES.

According to MESSRS. JEHE & CO. (*Handelsberichte*), a supply of the leaves of the *Piper betel* L., which are used in India for chewing with areca-nut, has recently been imported into Germany. An essential oil obtained from the leaves by distillation at Samarang by Schmitz, has been credited by him with having given good results in the treatment of catarrhal disorders and as an antiseptic. This claim has been substantially confirmed by Dr. Kleinstück, of Jena. The oil, which seems to be of an aldehyde nature, is said to oxidize with extreme rapidity, losing at the same time its characteristic ethereal odor and therapeutic properties. Great care will, therefore, be required in the transit of the leaves if the oil is to be distilled in Europe.

THE DIRECT ACTION OF CALCIUM, SODIUM, POTASSIUM, AND AMMONIUM SALTS ON THE BLOOD-VESSELS.

DR. H. G. BEYER has been investigating the action of the above salts on the blood-vessels, and publishes his experiments in the *Medical News*, September 4, 1886. He formulates his conclusions as follows:

1. Calcium salts cause the vessels to contract by virtue of their stimulating influence on the vaso-motor ganglia.
2. Sodium and ammonium salts excite, first, the ganglia of the vaso-dilators, next those of the vaso-motors; hence producing at first dilatation and afterwards contraction of the vessels.
3. Potassium salts stimulate the ganglia of the vaso-dilators only, and consequently produce dilatation. If, however, as was shown in two observations, the dilatation which they produce is followed by contraction, this contraction is so extremely slight that it may practically be neglected. Therefore any stimulating influence on the vaso-motor ganglia which they might possess is insignificant when compared with that which they exert over the vaso-dilators.

CLINICAL EXPERIENCE IN TYPHOID FEVER.

DR. AUFRECHT, chief of the City Hospital of Magdeburg, favorably known to the profession both as clinician and as author, publishes from time to time, under the title of "Pathological Communications," a little pamphlet, intended to represent the clinical experience gathered at that institution. The third number issued this year, treating of typhoid fever and its therapeutics, deserves to be carefully examined.

The clinical material embraces five hundred and fifty-one cases of typhoid fever that during the last six years came under Aufrecht's observation. Of these fifty-eight (*i.e.*, 10.5 per cent.) died, four even within twenty-four hours after admission to the hospital.

Aufrecht declines to regard the elevation of temperature alone as an indication for the bath, and employs the latter only in patients who, together with a temperature of 40° C., present a small but frequent pulse, and either nervous ataxia or delirium. Cases marked by a good, firm pulse, and freedom from nervous symptoms, were invariably found to take a favorable course without baths, in spite of the height of the temperature, while, on the other hand, the bath employed in accordance with

the above indications proved also a constant success. Frequently a single bath sufficed to reduce the temperature 2° to $2\frac{1}{2}^{\circ}$ C., to raise the working energy of the heart, and to eliminate threatening nervous symptoms. The number of baths usually required never exceeded five or six, given on three consecutive days. The author emphasized the maxim that in typhoid fever the mere elevation of temperature does not justify the employment of baths.

The routine practice in the Magdeburg Hospital is to give the typhoid fever patients a weak solution of muriatic acid (15 drops; 6 oz. water with 1 oz. syr. simpl.), an ice-bag placed upon the epigastric region, and another one on the head in case of cephalalgia. Most patients received also a tablespoonful of Hungarian wine every two hours, a practice which Aufrecht, however, does not approve of in private patients, these having generally a greater amount of albumen in store than hospital patients.

If the evening temperature is beyond 39.5° C., and the above indications for the use of the bath are absent, the patient receives, beginning with the next morning, daily, $7\frac{1}{4}$ grains of hydrochlorate of quinine. Except these small doses of quinine, which only exceptionally in rare cases were doubled, Aufrecht used no other antipyretic. To prevent decubitus every patient is at the very beginning of the treatment placed upon a water-bed. In this manner Aufrecht has avoided all cases of decubitus for the last two years.

The febrile dryness of the tongue may, our author believes, lead to grave consequences. The mucous membrane is gradually being broken, swallowing is rendered painful, and the patient refuses or is unable to take food. Speaking is likewise rendered difficult if not impossible for the same reason. Nor is it unlikely that through the broken mucous membrane of the larynx and pharynx bacteria penetrate the submucous tissues, and give rise to various grave local and even constitutional disturbances. This difficulty cannot, as might be presumed, be obviated thoroughly even by constantly-repeated draughts of water. Aufrecht applies, as soon as the tongue begins to dry up, glycerin, every two hours or more often, to it in so thick a coat that a part of the drug, through the induced motions of swallowing, reaches the hindmost portions of the pharynx and larynx. This procedure protects the parts from tears and crust formations.

Diarrhoea was combated by opium if the

stools exceeded the number of four in twenty-four hours. The drug is given in powder form, in $\frac{1}{2}$ -grain doses, two to four times daily.

In intestinal bleeding the liquor ferri was found to be wholly useless and, besides, irritating to the digestive functions. To decrease the peristaltic movement the patient received $\frac{1}{4}$ of a grain of morphine and two Pravaz syringes of a watery solution of ergotone (1 to 10). The latter solution is to be absolutely fresh, as in older ones germ-formation readily takes place. Friedländer's sterilized hypodermic solution will, of course, henceforth be exclusively used.

The vomiting often observed in typhoid fever patients in connection with peritonitic symptoms is by Aufrecht referred to intestinal ulcerations encroaching upon the peritoneum, and is treated by morphine given per os, or in obstinate cases hypodermically. This medication exhibited at the very beginning of the vomiting may possibly, in many cases, prevent a peritonitis, of which the vomiting is simply a premonitory symptom.

An especial value is placed on morphine in the cases marked by intense delirium.

Meteorism is best treated with ice applied to the epigastric region, and with small doses of morphine.

In conditions of collapse the hypodermic injection of camphor is unquestionably the most efficient remedy. The oil of camphor (6 camphor—24 oil of sweet almonds) is a very eligible preparation for this purpose. Aufrecht uses as much as 30 grains of camphor—*i.e.*, ten Pravaz syringes daily—even for several successive days. Abscesses have never been observed after these injections of oil of camphor.

Dr. Friedländer, of Berlin, the discoverer of the sterilized hypodermic solutions (*vide* leading article of August issue of the THERAPEUTIC GAZETTE), exhibited his preparations at the exhibition of German physicians and naturalists meeting in Berlin on September 18, and, as was to be anticipated, was the recipient of unqualified praise and commendation from all quarters. These sterilized solutions will be certain to meet with a warm reception also in this country.

In this connection we beg to state that Dr. Friedländer, who is a chemist of high standing in the German metropolis, is the proprietor of Simon's Apotheke, and has, as we understand, good reasons not to be mistaken for another gentleman having the same name who also owns an apothecary's shop in Berlin.

THE INFLUENCE OF ALCOHOL ON THE FUNCTIONS OF THE STOMACH.

DR. GLUZINSKI has just published in the *Deutsches Archiv für Klinische Medizin*, 1886, vol. xxxix, B. No. 9, the results obtained by his experiments instituted to ascertain the influence of alcohol upon the gastric functions. We epitomize his main conclusions by the following theses:

1. Alcohol disappears quickly from the stomach.
2. Aldehyde cannot be recovered, and alcohol very probably enters, as such, the circulation.
3. The digestion influenced by alcohol can be divided in two distinct periods,—viz., one, during which alcohol is still present in the stomach, and another after its disappearance.
4. The first period is characterized by an impeded or rather slowed state of digestion of albuminates, the second by the secretion of an energetic and concentrated gastric juice.
5. The mechanical working power of the stomach is moderately diminished.
6. The secretion of gastric juice after completed digestion lasts considerably longer than without the presence of alcohol.
7. Under the influence of alcohol larger quantities of fluid collect in the stomach, and assume through the action of the bile a yellowish coloration.

Comparing these results with daily experience, according to which alcohol is known to facilitate digestion, especially after a copious ingestion of food, it must be conceded that alcohol in small doses actually exerts a favorable influence upon the functions of the stomach. Especially to be noticed is the increased quantity of free muriatic acid which, at the time when the alcohol itself has long left the stomach, effects the digestion of large quantities of albumen. The momentary slowing of digestion during the first period after the ingestion of a small quantity of alcohol, such as a glass of cognac, is of too short a duration to be at all considered. The experimenter even saw that 100 c.c. of twenty-five per cent. alcohol left the stomach in fifteen minutes, and that instead of a slowing of digestion the secretion of an active gastric juice took place. The impediment to the mechanical functions of the stomach is, after small quantities of alcohol, likewise too trivial to require any consideration.

Different, however, are the results obtained after the use of larger quantities of alcohol. The slowing of digestion is now considerable; the mechanical functions are distinctly im-

peded, necessitating a longer stay of the food in the stomach. Hence it is clear that alcohol in large doses decreases the quickness of digestion.

To obtain the salutary effects of small doses of alcohol it is necessary to administer them some time before the meal, so as to bring the food at once into the second period which, as stated above, is favorable to digestion.

Another series of experiments made to ascertain the influence of alcohol upon digestion in a pathologically altered stomach claims likewise our attention, and can be thus resumed:

The use of stronger alcoholic drinks is unadvisable in conditions of an abnormally increased or decreased acidity of the gastric juice. In cases calling for excitantia, alcohol is nevertheless to be given, though best some time before the meal for reasons intimated above.

These results throw no favorable light upon the conducive virtues of the numerous pepsin-containing alcoholic preparations, the use of which is recommended in all cases of an impeded digestion without regard to the cause. Besides, it is rather likely that alcohol precipitates pepsins, and ought for this reason not to be associated with the latter.

CONTRIBUTION TO THE ACTION OF URETHAN EMPLOYED SUBCUTANEOUSLY.

It seems as though urethan is but slowly making its way into the practice of neurologists, though the favorable reports concerning its sedative and hypnotic effects, formerly sparse and possibly unreliable, begin now to be announced somewhat more frequently and from more authoritative sources.

Not long ago, Dr. Rottenbiller, who had given urethan a very fair trial, spoke in very favorable terms of the drug, especially of its hypodermic application, in the *Centralblatt für Nervenheilkunde*, 1886, No. 10. Induced by Rottenbiller's eulogization of the remedy, DR. WILHELM KÖNIG, of Dalldorf, instituted a series of clinical experiments with urethan, and communicated the results obtained to the *Centralblatt für Nervenheilkunde*, June 15, 1886.

Urethan was exclusively tried on patients with a high nervous excitation; as for lighter cases, remedies of a prompter and safer nature are more suitable, and hypodermic medication besides is a relatively inconvenient measure.

Ten paralytic patients were, for the sake of

an easier superintendence, placed together in one room, and received for seven continuous days, at 8 o'clock P.M., one to three Pravaz syringefuls of a fifty per cent. solution of urethan, each syringe containing about seven grains of urethan.

The effects of this medication were still less satisfactory than those obtained by König from the internal administration of the drug. Besides, some patients soon refused to allow any more injections, partly because they were in no way benefited by them, and partly because they were annoying and painful.

König found that the patients came but very slowly and late under the influence of the hypnotic, hours usually passing before sleep set in. In one instance only the patient fell asleep at 8.45 P.M. The following table represents the percentages of obtained successes :

Dose.	Successes.
1 syringe (7 grains of urethan).....	47 per cent.
1 ½ syringes (10 grains of urethan).....	25 per cent.
2 syringes (14 grains of urethan).....	33 per cent.
3 syringes (21 grains of urethan)	0 per cent.

König abandoned the experiments on the seventh day, feeling convinced that in conditions of high-graded excitation the action of the drug, in doses safe and convenient to administer, was not sufficiently energetic to warrant its employment.

König also mentions that in nearly all patients who received the drug the appetite was found to be decreased on the third day. Other secondary effects, though, were not observed.

These rather negative results obtained with urethan recall the equally unsatisfactory experiments made with the same drug by Dr. Bock, of Pankow, as reported by the observer himself in the February issue of the *GAZETTE*, and differ strangely from the alleged successes of Von Jaksch, Rottenbiller, and others. As long as this state of uncertainty regarding the actual therapeutic worth of urethan lasts, the practitioner ought not to feel called upon to relinquish the old and tested stand-bys for a new and unreliable agent.

ON PELLETERINE IN CHILDREN.

It is known that pelletterine sometimes produces in adults symptoms of intoxication, and the question how does the drug act on infants is therefore a practically interesting one. MÉPLAIN writes to the *Bulletin de Thérapeutique*, July 15, 1886, that having been in charge of a child 2½ years old affected with tænia, in

which all other anthelmintics proved useless, he prescribed 1 grain of pelletterine to his little patient, and was gratified to find the drug doing its work. The worm passed, and no untoward symptom was observed in the child. Méplain says that a small dose of pelletterine suffices to expel the tænia in a child, and children seem comparatively less susceptible to the toxic action of the drug than adults.

The drug, however, concludes the writer, ought to be of an irreproachable activity.

THE INTRA-UTERINE STEM IN THE TREATMENT OF FLEXIONS.

At a meeting of the Chicago Medical Society, held June 7, 1886, PROFESSOR A. REEVES JACKSON read a paper entitled "The Intra-uterine Stem in the Treatment of Flexions," exhibiting the stems used (*Chicago Medical Journal and Examiner*, August, 1886). The essayist began treating uterine flexions with the stem pessary in 1870. Prior to that time the only methods he had employed were gradual dilatation and incisions. The results were so unsatisfactory that he sought for a safer and more successful method. Having received the impression that the use of the stem pessary was more hazardous than either the dilating or cutting plans, he commenced its employment with misgiving, and did not rely wholly upon it, but preceded it with either gradual stretching or slight incisions. In two cases this mixed method was followed by pelvic abscess, a sequence which he had never observed when the stem alone had been used. All cases of uterine flexion are not accompanied by dysmenorrhœa or sterility, yet when there exists a relationship between these symptoms and an existing flexion, the latter must be looked upon as a mischievous factor, and one that should be removed. He had never treated any case of flexion in which dysmenorrhœa was not present, although co-existent barrenness has been frequently an additional incentive to the patient to undergo efforts at cure.

He preferred Chambers's bifurcated vulcanite instrument, although the divergence of the branches *below* the internal os uteri was a radical defect in the instrument as ordinarily used. Frequently the branches should be closed so that the stem might be practically single in that portion which traverses the cervix. His method is as follows : A flexion and its direction being diagnosticated, a flexible bougie is passed through the bent portion of

the canal and quite to the fundus. The depth of the canal being carefully noted, a pliable stem, consisting of the distal portion of the same, or a similar bougie, one-third of an inch shorter than the ascertained depth of the canal, is selected for introduction. A flange or bulb is formed upon the outer end of the stem by rolling upon it a section of rubber tubing. The woman being placed on the back, in Simon's position, and the os uteri exposed with a speculum, the stem, either grasped with a dressing forceps or mounted upon the end of a piece of pointed wire, is passed entirely into the uterus. A large tampon of cotton, moistened with slightly aluminized glycerin, is pressed against the bulb of the stem, and allowed to remain one or two days. The tampon is removed and replaced at suitable intervals, until the tendency of the stem to leave its position disappears. After this yielding stem has remained from one to three weeks, according to the degree of tolerance manifested by the uterus, it is removed, and a thicker one put in its place. This likewise is permitted to remain a week or two, and is then replaced by a Chambers stem. While not very much, or, indeed, any change of shape is to be expected in consequence of the use of the flexible stem, yet, in several instances, a very considerable alteration took place within a few weeks, or even a few days, and in a few cases it was found unnecessary to resort to a rigid instrument at all. Usually, however, it had been necessary to use an inflexible instrument for from three months to a year, not continuously, but for periods of three or four months, with an interval of a week or two, during which the stem was removed in order to test the degree and permanence of the improvement. The feature of this treatment, which is essential to its safety and success, is its slow and gradual conduct, and the non-observance of this necessity has been the cause of dangerous results and failures to cure.

The drawbacks attending this method of treatment were: 1. Difficulty in retaining the instrument in position; 2. Pain; 3. Hemorrhage; 4. Pelvic inflammation; all except the first being common to all other methods of treatment. A table comprising the details of 64 cases treated by the intra-uterine stem alone was given, showing the ages and social conditions of the patients, the direction of the flexion, and the result of the treatment. Of the entire number, 42 occurred in married and 22 in single women. Of the former, 8 had borne children; the other 34 were sterile. Of

the latter, 8 subsequently bore children. A cure of the flexion followed in 40; of the remaining 24, 4 were improved and relieved of dysmenorrhœa. In 20 the result was unknown. The ages of the patients ranged from 19 to 39 years. The uterus was ante-flexed in 50 and retroflexed in 14.

In conclusion, the author said, "I believe the principle of the intra-uterine stem in the treatment of flexions to be correct; and it need not be dangerous, at least, no more dangerous than any other effective method. I further believe that by its use more cases of uterine flexion can be cured than by any other means at present in vogue. The conditions of both safety and success are watchfulness, patience, and slow progress."

NOVEL TREATMENT OF DIPHTHERIA BY DIGITALIN AND SULPHIDE OF CALCIUM.

We condense the following important therapeutical considerations from the *Archives de Pharmacie*, September 5, 1886:

DR. GALICIER some time ago eulogized a novel form of treating diphtheria, which, it seemed, had given excellent results. A paper appearing in the *Moniteur Thérapeutique* of August, 1885, by Dr. Cug, of Pau, in which this physician claims to have saved two cases of diphtheria,—two boys, aged $4\frac{1}{2}$ years and 5 months respectively,—calls our attention anew to the plan proposed by Dr. Galicier. This physician orders the following pills:

R Sulphide of calcium, 0.05;
Digitalin, 0.001;
Arsenate of quinine, 0.001. M.
Fiant pil.

S.—Take one every hour, day and night.

Both Cug and Galicier claim that no intoxication was ever produced by this remedy.* The great general intoxication probably prevents any further intoxication from the part of digitalin.

The pills are usually continued for a couple of days.

LOCAL ANÆSTHESIA FOR ELECTROLYSIS.

DR. FRANKLIN H. MARTIN, Professor of Gynæcology in the Chicago Polyclinic, writes

* To give 2 cg. of digitalin in twenty-four hours from the beginning to a child seems in our judgment a rather hazardous treatment, provided the drug is not inert, as many specimens in the market actually are.

to the *Medical Record*, October 9, 1886, as follows: "Where it is necessary to use a very strong current of electricity for purposes of electrolysis, or any other purpose, and a reliable means of measuring the current, other than by the sensations of the patient, is at hand, it is very desirable oftentimes to have some means of producing anæsthesia. Especially is this the case with women who have been brought to an anæmic and nervous condition from menorrhagia coincident with a fibroid growth of the uterus. In these cases, where electro-puncture is used as a means of removing the growth, or even where the somewhat milder electrolytic current is employed for the purpose of causing absorption of inflammatory exudates, there is a very disagreeable burning sensation experienced at the positive sponge electrode. By utilizing the properties of the galvanic current, discovered by Haertner, viz., the direct transference by the galvanic current of particles in solution through permeable bodies in a direction from the positive to the negative pole of the battery (the *cataphoric* action of Du-Bois Raymond), a very satisfactory condition of local anæsthesia can be accomplished. The method adopted is as follows: Before applying the positive sponge electrode to the surface, moisten the sponge with a one-fourth of one per cent. solution of muriate of cocaine. As the current is turned on, it will be found that the absorption of sufficient amount of the cocaine is immediately promoted to produce a complete state of anæsthesia of the surface beneath the electrode. This, of course, does not affect the point of application of the negative pole,—the point of introduction of the needle. Cocaine can still further be utilized here by injecting hypodermically a small quantity of the aqueous solution at the point of introduction of the needle through the skin, or by applying a solution of the oleate upon the mucous membrane of the vagina or uterus, if the needle is introduced in this location. By bearing these simple facts in mind, electrolysis for fibroid tumor can be made familiar without the necessity of administering a general anæsthetic."

ON SALICYLATE OF BISMUTH.

DR. SOLGER publishes in the *Deutsche Medicinal Zeitung*, No. 22, 1886, some interesting therapeutic facts concerning the salicylate of bismuth, a drug which appears worthy of our attention.

Solger first exhibited the remedy to a Ger-

man physician, who for ten years had suffered from frequently returning pains in the region of the sigmoid flexure. Laxatives, medicinal waters, diet, electricity, nervines, in brief, everything that therapeutists could suggest, were either useless or even deteriorated the condition of the patient. Using for fourteen days salicylate of bismuth, in doses of 12 grains three times daily, the patient got rid of his pains and recuperated fully his broken-down health. A return of the pains some time after yielded also to a fourteen days' medication with salicylate of bismuth.

Later, Solger has given the drug to numerous patients, both in private and in hospital practice, and has obtained surprising results with it. He has, however, reduced the average dose from 12 grains to 8 to 10 grains, without obtaining any less satisfactory results. The following formula represents, according to Solger, the most effective and convenient mode of employing the drug:

R Bismuth. salicyl.,
Sacchari lactis, aa ʒvi. M.
F.—P., divide in p. æq. No. 40.
S.—One powder every eight hours.

The drug occasions no inconvenience, either when taken on an empty stomach at six o'clock in the morning, or after dinner at two o'clock, provided the dry powder is washed down with a little water. Given in wafers, the drug is apt to produce some gastric irritation.

Solger gave the drug principally in chronic diarrhoea and intestinal catarrh, especially after other remedies had failed. An aged lady, who, suffering from a chronic intestinal catarrh and involuntary discharges from the bowels, had been reduced to a stage of profound emaciation, and had for years been confined to the bed, regained in three months her health by the use of salicylate of bismuth. In another case, a demented woman, troubled with chronic diarrhoea and incontinence of urine, took the drug for several months, and recovered not only from her grave physical ailments but also gained a certain low degree of intelligence. In phthisical subjects the drug proved likewise very valuable in arresting the exhausting diarrhoeas and inducing a state of comparative well-being.

Noxious effects can only appear in cases of intestinal obstruction combined with a low nutrition. Among the symptoms of an incipient intoxication Solger mentions nausea, a furred tongue, and pressure in stomach and bowels. The tongue gives an especial warning by pre-

senting a gray appearance, with a black streak in its longitudinal axis. The trouble is, however, easily relieved by a good dose of castor oil, or any other laxative, and is no indication for the suspension of the drug.

In the ectatic conditions of the stomach, and especially in stenosis of the pylorus, the drug is contraindicated. Investigating these beneficent effects of salicylate of bismuth in the mentioned gastro-intestinal affections, we cannot attribute them to the (moderately) astringent properties of bismuth, but are justified in viewing the disinfectant influence of the drug upon the intestinal contents as its principal therapeutic factor. In this respect the drug can be placed on a line with naphthalin, only that the latter drug is not nearly so well borne by the stomach as salicylate of bismuth. Both drugs check the profuse propagation of bacteria and micrococci in the intestines, and thus produce curative effects in the affections mentioned.

BALSAM OF COPAIBA IN GONORRHOÆAL OPHTHALMIA.

DR. S. HAYNES, of Saranac, N. Y., writes to the *New York Medical Record* (October 9, 1886) that he was called to see an infant, four days old, who was suffering from conjunctivitis, contracted from the mother, who had gonorrhœa at the time. The inflammation had existed two days, and the cornea was found covered with thick pus, and the eyelids were so swollen that they could be separated with difficulty even when the child was under the influence of chloroform. For several days the remedies used seemed only to hold the disease in check, and the infant meanwhile was rapidly losing flesh. Severe stomatitis was also developed. Applications were now made of balsam of copaiba to the temples, the external surface of the lids, and above the eyebrows three times a day, a little being occasionally inserted between the lids. The pus was carefully removed every hour by pledgets of cotton, wet with solutions of alum or sulphate of zinc, and fresh butter was applied to the edges of the lids every night. From the commencement of the use of the balsam a marked improvement was noticed, and in three or four weeks the cornea was perfectly clear and free from disease, and the child had gained in flesh. The case had everything against it, as the parents lived six miles away and could be visited only occasionally, the mother was confined to bed for a great part of the time, and the family were ignorant and

suffered from the want of many of the necessities of life. Dr. Haynes states that the use of the balsam of copaiba was suggested by an article which he read some time ago, but he has forgotten both the name of the writer and the medical journal in which the article appeared.

OXYMEL SCILLÆ IN WHOOPING-COUGH.

DR. NETTER has recently read a paper before the Congress de l'Association française pour l'Avancement des Sciences (*vide Archives de Pharmacie*, September 5, 1886), which, like all other therapeutic suggestions pertaining to pertussis, recommends itself to the notice of the practitioner.

Netter advocates the use of the oxymel scillæ, prepared strictly according to the prescription of the Pharmacopœia, as an efficient remedy in whooping-cough. He gives the preparation pure without any excipient, and orders it in the following doses:

For suckling infants, 20, 40, to 60 drops in twenty-four hours, in the intervals of nursing.

For children of about 2 years of age, 4 to 5 teaspoonfuls, taken afternoon and evening, in intervals of six minutes.

For children 3 years of age or older, 6 to 7 teaspoonfuls, taken similarly as above.

For adults, 8 to 9 teaspoonfuls, taken in the same manner.

His observations at the Hospital of Nancy went to show that the remedy administered under these conditions proved very efficacious. It is indispensable that the stomach be empty when the drug is taken, and the latter may be continued until the disappearance of the paroxysms.

Dr. Rémy confirmed Netter's observations, and stated that under this medication whooping-cough could be cured in about a week's time, and sometimes even sooner than that.

FAILURE OF LARGE DOSES OF ANTI-PYRIN IN A CASE OF SUNSTROKE.

DR. M. SINGER, house surgeon of St. Mary's Infirmary, Galveston, Texas, reports the following case in the *Medical Record*, September 25, 1886: "A man, name unknown, aged about 40, was brought to St. Mary's Infirmary on August 5, 1886, at 6 P.M. At about three o'clock in the afternoon he had been found lying unconscious in the street by a police officer, who, supposing him to be drunk, took him to jail. Two hours later the jailer, noticing the deep coma and intense bodily heat, had him

conveyed to the hospital. Upon admission the pulse was 120, full and strong; respiration 40, stertorous, with short intermissions about every five minutes; temperature 108.4°. Skin hot, dry and parched; coma complete; pupils slightly contracted. I gave 50 grains of antipyrin under the skin, applied sinapisms to extremities, and ice on the head. At 7 P.M. the patient's condition was unchanged, every symptom as before. Gave 10 grains of antipyrin under the skin.

"At 8 P.M. the patient's general condition remained the same, except that he had passed his water in bed. Pulse 122; temperature 108.8°. Gave hypodermic 20 grains of antipyrin. At 9.30 P.M. symptoms unchanged, except for the temperature, which now was 109.8°. The excessive heat of skin could well be felt through the patient's shirt and the bed-sheet. Gave hypodermic 20 grains of antipyrin.

"At 11 P.M. pulse 140, weak; temperature 109.8°; respiration 18, stertorous, puffy, sometimes catching and irregular.

"Patient died at 11.30 P.M. Temperature at time of death 110°; post-mortem temperature, taken three-quarters of an hour after death, 108.5°; pupils slightly dilated. The temperature in this case was taken in the axilla. No other antipyretic measures were employed but those mentioned above. I have used the same preparation of antipyrin in many febrile conditions, and in doses of from 20 to 30 grains, without failing at any time to reduce the fever heat. In this case, however, 100 grains of the drug, given under the skin, within a period of three and a half hours, proved to be utterly worthless. No diaphoresis was produced at any time after the administration of the remedy."

ON INSPIRATIONS OF COLD AIR IN FEVER.

DR. IWAN WOITKEWITSCH communicates to the *St. Petersburg Med. Wochenschrift*, No. 24, 1886, his views on the value of cold air inspirations in febrile affections. His observations were made in seventy-one instances, and comprise cases of typhoid fever, pleurisy, and pneumonia. The air was cooled by means of an apparatus constructed for the purpose by Woitkewitsch, and applied to the patient for fifteen to forty-seven minutes. The observer draws the following conclusions:

1. The febrile temperature was lowered by the cold air only immaterially and for a short time.

2. Pulse and respiration, however, were considerably slowed.

3. The general subjective state of health and sleep improved likewise, though for a short time only.

4. The phenomena of the bronchial catarrh decreased to an eminent degree under the influence of cold-air inspirations.

5. The inspirations exerted a favorable influence upon the general course of the disease, and in no instance proved to be injurious.

THE PROPER USE OF ERGOT IN OBSTETRICAL PRACTICE.

From an elaborate paper with the above title, read by DR. FRANK HAMILTON POTTER before the Buffalo Obstetrical Society, the author draws the following conclusions (*Buffalo Med. and Surg. Journ.*, September, 1886):

1. Ergot is a drug which in any of its preparations tends to deteriorate rapidly, and should never be used excepting when prepared from a pure and fresh specimen.

2. It is a stimulant to the tubular and non-striated muscular structures of the body, causing them to contract.

3. It acts especially upon the muscular structure of the uterus, throwing it into a state of tonic spasm.

4. Its action on the uterus is, however, uncertain; sometimes it contracts the entire organ, at others only a small part of it.

5. If the entire organ is contracted, labor may be delayed through the rigidity of the os, and the child destroyed by the interference of the placental circulation.

6. Or the contractions may be so powerful as to force the child at once into the world, causing any or all of the lacerations of the soft parts of the mother.

7. The life of the child may be endangered, also, through absorption of the essential oil of ergot.

8. If given after the birth of the child, and before the expulsion of the placenta and membranes, it may prevent the removal of the latter, and thus be indirectly a cause of puerperal septicæmia.

9. It may act in a similar manner in cases of abortion, actual or threatened, and cause a similar result.

10. The proper use of ergot in obstetrical practice is limited to those cases in which, after the expulsion of the placenta, the uterus refuses to contract, or, having once contracted, shows a tendency to secondary relaxation. Even in these cases, however, reliance should

not be placed upon it alone, but its action should be supplemented by the other means used to provoke uterine contraction.

THE ANTIRHEUMATIC VIRTUES OF ANTIPIRYN.

We abstract from the inaugural essay of DR. EICH (Basel, 1886) on the antirheumatic virtues of antipyrin some points of general interest.

Of thirty-six cases treated by Dr. Eich (acute and chronic articular rheumatism, acute muscular rheumatism, rheumatismus vagus) all patients but two could be discharged as cured. In one of the two cases the failure was predicted on account of the great anatomical alterations produced by the chronic process in the joints, and in the other salicylic acid given alternately with antipyrin proved likewise useless. Eich concludes from the results obtained that antipyrin owns an exceedingly prompt and reliable antirheumatic power, and is in this respect in no way inferior to the preparations of salicylic acid. Still, Eich continued, the curative action of antipyrin is as little infallible as that of salicylic acid, and appears to possess no greater power to prevent cardiac complications than the latter remedy. In the treatment of affections of the endocardium and the serous membranes Eich saw likewise good effects from the drug. The absence of all secondary effects, however, renders antipyrin more eligible than the preparations of salicylic acid; at least the two remedies can conveniently supplement each other in case one should fail.

As to the dose, Eich gives at the beginning from 60 to 90 grains, and later only 30 grains *pro die*.

ELECTROLYSIS IN GYNÆCOLOGICAL SURGERY.

At the meeting of the American Gynæcological Society, held in Baltimore last September, DR. BAKER read a paper on the uses of electrolysis in gynæcology (*N. Y. Med. Journ.*, October 16, 1886). The speaker referred more particularly to the use of electrolysis in cases of fibroid tumor, and laid down the following rules for the performance of the operation: It should not be employed within a week before or after menstruation. An anæsthetic should be administered. It was better to use electrolytic needles for both the positive and negative poles; the operator should be absolutely sure of the cleanliness of the needles;

the needle should be deeply buried in the tumor, in order that the current might be insulated from the parts outside of the growth; the insertion of the needle should be made at the most prominent part of the growth, whether that was in the vagina or in the abdominal wall; the needles should not be too nearly approximated; if both needles were properly placed, the position of the two poles made no difference; the circuit being completed, the number of cells should be gradually increased from four to twenty or thirty (a more exact means of determining the strength of the current would be the galvanometer, but this had not given him accurate results); the length of time during which the application was continued should be from ten to twenty minutes, and should be determined by the character of the pulse. When the pulse became slower and weaker than normal, the number of cells should be diminished or the current discontinued. The current should be diminished gradually, and the wires should be disconnected at the battery before the needles were removed. The applications should not be made at the surgeon's office. After the application, the patient was to be put to bed, where she was to remain for one week. With such precautions, the speaker had never seen shock after the operation. A single treatment was often all that was necessary. He had never found it necessary to make more than three applications, and the latter number in only one case. There should be an interval of at least from one to three months between the applications. The use of electrolysis was also of service in the treatment of inflammatory effusions. Before resorting to electrolytic puncture, the application of the galvanic current should be tried, as it did not require an anæsthetic, and avoided the slight risk which accompanied even small wounds.

The following conclusions were presented:

1. Electrolysis was a useful agent in the treatment of certain cases of fibroid tumors of the uterine walls and of chronic circumscribed perimetric effusion.
2. When applied to fibroid tumors of the uterus, electro-puncture was a most reasonable and efficient method.
3. In the treatment of fibroid tumors by this agent, it was unnecessary to apply it often.
4. Cases of perimetric effusion to be treated by this method should be selected with care in reference to the absence of all acute symptoms.

In the discussion which followed, DR. CHADWICK stated that he had tried electrolysis ten

years ago in one case of fibroid tumor, introducing the needle through the abdominal wall. This had caused a smart attack of peritonitis. During the following year there was no decrease in the size of the tumor. He had also seen abscess follow its use.

DR. ENGELMANN said that the dangers mentioned by Dr. Chadwick were those which were liable to follow puncture through the abdominal wall. By puncturing through the vagina, and, if possible, through the tissue of the uterus, the dangers of inflammation which accompany abdominal puncture were avoided.

DR. JAMES B. HUNTER, of New York, could not say that he had seen one case of fibroid tumor permanently relieved by electrolysis. In one case, in which it was freely used by Dr. Freeman and himself, he had subsequently removed the tumor by hysterectomy, the patient making a good recovery. He could find no evidence of the effect of the current on the tissue of the fibroid.

DR. MANN had employed this agent in one case, plunging one needle into the tumor from behind through Douglas's *cul-de-sac*, with a sponge electrode over the tumor on the outside. The current was kept up fifteen minutes. Six applications were employed. The size of the tumor was much diminished, and the tenderness and pain were lessened. The patient was now able to attend to her duties.

NEW INVESTIGATIONS ABOUT POISONING WITH JEQUIRITY.

We abstract from the *Ann. di Chim. e di Farm.*, No. 2, 1886, the following points of DR. BUFALINI's researches on jequirity :

Jequirity, the seeds of *Abrus precatorius*, Lin., owes its powerfully toxic action to a principle soluble in water, which, introduced through the jugular vein directly into the heart, kills rabbits instantly through cardiac failure. Ingested by some other mode, death is not so rapid. In frogs, the drug causes at first cardiac arrest in diastole,—excitation of the cardiac inhibitory apparatus,—lasting seventeen minutes ; later the beats of the heart appear again, the inhibitory apparatus becoming paralyzed. The drug produced in no animal any alterations of the pupils, and led Bufalini to believe that the distinct myosis observed in the course of the jequirity ophthalmia is merely a reflex effect of the keratitic process.

Finally, the observer states that the toxic principle of jequirity is probably identical with abrin, the glycoside found by Hardy,

Marden, and Waddel. Abrin foams strongly in water, and changes into glucose under the influence of a diluted acid.

THE LOCAL TREATMENT OF PSEUDO-MEMBRANOUS CROUP—INTUBATION OF THE LARYNX.

DR. J. LEWIS SMITH, in an article in the October number of *The American Journal of the Medical Sciences*, expresses his belief that intubation is destined to be employed more generally than tracheotomy in the treatment of pseudo-membranous croup. He maintains that in all cases in which the obstruction is limited to the larynx and trachea, intubation relieves the dyspnoea as quickly, effectually, and permanently as does tracheotomy. It gives, in most instances, complete relief for a time. If the respiration subsequently become embarrassed, and no benefit occur from cleaning the tube, tracheotomy may be required. Intubation may properly precede tracheotomy in most cases.

Not a few parents in the middle and lower classes allow their children to die rather than consent to this operation. On the other hand, few parents will object to intubation, and when they see the relief which it produces they will probably consent more readily to tracheotomy if the dyspnoea should return. If only one of these operations be performed, statistics thus far show nearly as good a result from intubation as from tracheotomy.

Now that diphtheria has become so common the physician should be provided with the necessary instruments for intubation whenever diphtheria appears in his locality. Alkaline and trypsin inhalations, properly and almost constantly used, and intubation performed early, when the patient begins to suffer from dyspnoea, would probably prevent the necessity of tracheotomy in a large proportion of instances. But if such treatment do not fully relieve the dyspnoea, it will in most instances so diminish it and retard the progress of croup that the physician, remote from help and unfavorably situated for the performance of tracheotomy, will have ample time to prepare for this operation. Intubation may prevent the need of tracheotomy, but if not, it presents no hindrance to it.

TREATMENT OF WHOOPING-COUGH.

The *Bull. de Thérapeutique* contains in its May issue a review of various modes of treating pertussis, which invites our interest.

As to the etiology of the disease, authorities like Michel and Hack agree that whooping-cough is a reflex neurosis originating in the nerves of the nose. These therapeutists, therefore, believe in treating the affection by means of powders applied to the nasal mucous membrane. Michel tested the rationale of this treatment in fifty cases, and pronounces the results obtained as satisfactory, in the majority of cases at least. The substances which he used in these cases were quinine, either pure or mixed with benzoic acid in the proportion of one of the former to three of the latter, tannin, boric acid, salicylic acid, iodoform, cocaine, bicarbonate of sodium, and marble-dust. The last-mentioned substance was used in order to study the action of inert powders. In several cases Michel ascribes the curative influence of the agents used simply to their mechanical action. The most effective substances which were tried were quinine, benzoic acid, tannin, and marble-dust; cocaine, salicylic acid, boric acid, and iodoform making very little impression upon the cough, the remedies being only used during the spasmodic phase of the disease. Of the fifty cases treated, all the symptoms of the disease disappeared at the end of eight days in six cases. In six other cases the symptoms were improved, but the duration of the disease was not affected. The weather exercised a marked influence upon the intensity of the disease, the cough becoming more painful and more frequent when it was cold and damp, especially if the wind were east. When the weather became milder and the easterly wind had subsided, the symptoms invariably improved. It was also observed that dampness had a more unfavorable effect than cold.

Sauerhering's plan of exhibiting quinine has been previously discussed in the GAZETTE. This physician professes to cure whooping-cough in from fifteen to twenty days with quinine alone. His doses are very large. To infants he gives 1 grain and more at a dose; to children in the second year of life, 1¾ grains; and in the seventh and eighth, up to 4 grains. The quinine is given with a little sugar, one dose at night, and three doses on each of the following three days. Then there is a respite of three days, after which the same number of doses and in the same manner is to be repeated. The same plan is followed after three days more of rest, and by this time, in the author's experience, the cough has disappeared.*

* Henoch's experience with the method of Sauerhering was wholly negative.

Roger's treatment, when the paroxysms have a convulsive character, consists in the use of the syrup of valerian in doses of ½ to 1 fl. oz., or of the tincture of musk in doses of 5 to 10 drops for children under 2 years of age, and 10 to 20 drops for those between 2 and 5 years. If laryngeal spasms are frequent, he recommends the inhalation of emollient or narcotic vapors, burning in the vicinity of the nose and mouth nitre-paper, stramonium, or belladonna powder. When there are paroxysms of suffocation, he recommends (with Henoch) the inhalations of ether and chloroform. If suffocation seems imminent, he recommends the inhalation of ammonia, the free use of cold water upon the face, and active friction upon the walls of the chest, especially in the region of the heart.

Guerder, discussing likewise the therapeutics of whooping-cough in the *Journal de Médecine de Paris* (June, 1886), places a considerable stress upon thorough disinfection of the sick-room. In an extensive epidemic of pertussis, in February of this year, which was particularly prevalent among very young children, the author treated his cases, at first, by disinfecting the sick-rooms with carbolic acid, and then using a syrup composed of—

Syr. diacodii,
Syr. belladonnæ, ℞ fʒii;
Acidi phenici, grt. x;
Potassii brom., fʒi.

This was administered in doses of a coffee-spoonful once or several times a day, according to the age of the patient. Only a moderate degree of success attended this treatment, and when the medicine was suspended the number of paroxysms became as great as before. The continued use of belladonna was also found very undesirable in young children, as it produced decided dilatation of the pupil, delirium, and a condition of narcosis which it was deemed prudent to remove.

The nasal catarrh which accompanied the disease, the injection of the nasal mucous membrane, and the probable parasitic character of the disease suggested the idea that the paroxysms of cough and asthma were of a reflex character, and might be susceptible to a similar course of treatment to that which has been found efficient in hay-fever. A powder was, therefore, made of equal parts of boric acid and of burnt coffee, and blown upon the nasal mucous membrane morning and evening. Thirty children were thus treated, seven being under 1 year of age, seven between 1 and 2, six between 2 and 3,

ten between 3 and 8. Seventeen of these received almost no treatment except the insufflations, while the others had already received some benefit from the use of the syrup, the formula of which is stated above. In all cases benefit began to be apparent in from two to six days, the paroxysms of coughing becoming less frequent and less intense, the vomiting, the epistaxis, and the nasal catarrh diminishing or disappearing. The general condition also improved, and in fifteen to twenty days the patients were apparently well. This result is the more satisfactory since the cases occurred among poor people surrounded by bad hygienic conditions, and the children were out of doors much of the time in cold and wet weather alike. In those cases in which the insufflations were practised at the beginning of the disease, the course was invariably a mild one, and a cure was effected in eight to fifteen days. Powdered benzoin, which was recently recommended by Michael, of Hamburg, for this disease, to be used also by insufflation, gave good success, but was not so satisfactory as the mixture of pulverized boric acid and pulverized roasted coffee.

In conclusion, we allude to the treatment of Dr. J. Bachem, of Bonn, who blows a mixture of muriate of quinine (three parts) and powdered acacia (one part) in the nostrils once or twice daily. In sixteen cases thus treated he effected a cure after an average treatment of twenty-one days.

Our readers will recall from the therapeutic notes of our special correspondent at Berlin that Henoch regards opium as the only reliable remedial agent in whooping-cough.

NOTHNAGEL ON THE TREATMENT OF PERICARDITIS.

PROFESSOR NOTHNAGEL, of Vienna, in a clinical lecture on the treatment of pericarditis, advises that in cases where there is pain in the cardiac region, fever, and the commencement of exudation, leeches, varying in number from three to ten, according to the gravity of the symptoms and the constitution and strength of the patient, should be applied. The leeches should be renewed every four or six days. Cupping may be substituted, but leeches are preferable. An ice-bag should be applied, or a directing apparatus through which cold water can be constantly supplied to the part. Cold compresses are of no use unless they are laid on ice, and then they must be changed every five minutes.

Digitalis for internal use is indicated under certain circumstances. It is useful if the cardiac action is greatly increased, especially if there are signs of the heart-muscle becoming implicated, when it should be given in somewhat larger doses. Digitalis is not desirable in the earlier stages of the disease, but in the later ones, when there are signs of weakness of the heart-muscle and the pulse is weak, it is indispensable. Other internal remedies are useless. Mercurialization—viz., calomel in small doses of three-quarters of a grain internally, and gray ointment externally—has no effect. The pain is scarcely ever severe, and if it is persistent it may be relieved by cold and blood-letting. To this a high temperature is no drawback, as the fever subsides as the inflammatory appearances disappear. If effusion has begun, other means must be used, such as counter-irritation of the skin and the promotion of reabsorption. Ice and blood-letting are of no use in this case. The cardiac region must be painted with equal parts of gall and iodine tincture, or an ordinary cantharides plaster may be applied, which should be kept on from eight to twelve hours till a blister is raised. This is of greater use in subacute than in acute pericarditis. Digitalis does not directly promote reabsorption, but indirectly by its influence on the action of the heart. Should the patient's life be threatened by copious effusion, paracentesis of the pericardium must be performed. This operation is often employed, and with not unfavorable results. Great care must be observed; the pointed trocar of Dieulafoy's apparatus must not be used, but a blunt one, like that of Dr. Fraentzel.—*Lancet*, September 4, 1886.

PROPAGATION OF MEASLES BY HEALTHY PERSONS.

From an editorial of *Le Concours Médical*, June 12, 1886, we abstract the following observations:

The possibility of carrying the contagious principle of measles from place to place by the medium of the bodies of healthy persons was recently discussed by the Medical Society of Berlin, and one gentleman, Joel, of Lausanne, presented certain facts, which lead to the belief that such a possibility does exist, and that the medium is often furnished by the physicians themselves. One case which was cited was that of a boy who was brought from Geneva to Lausanne while he was passing through the incubation stages of measles. The butcher and the postman who served the

institution to which the boy was brought conveyed the disease to their children, who were attacked with it in a short space of time, and, what is quite remarkable, the children in almost every house to which the postman delivered letters were attacked. A little girl was brought to a hospital, and in a few days had undoubted symptoms of measles. Her father had paid her several visits before the measles appeared, and it was ascertained that two of his children were suffering at his home from the disease. Eight other children in the hospital were quickly seized with it.

It is thought that physicians cannot always avoid carrying the contagion with them, even when extraordinary care is taken. Prophylactic means on the part of the physician should be as thorough as possible, however, by disinfection, change of garments, and all other available procedures.

Reviews.

RHEUMATISM: ITS NATURE, ITS PATHOLOGY, AND ITS SUCCESSFUL TREATMENT. By T. G. MacLagan, M.D. New York: William Wood & Co., 1886.

Those who are familiar with Dr. MacLagan's earlier work on rheumatism will read this volume with increased interest. Ever since 1876 an advocate of salicin, he now uses the salicyl compounds with almost equal success, though still retaining his original idea of the superior virtues of the former. With his belief in the miasmatic or malarial nature of acute rheumatism any one may differ, but of the value of the salicyl compounds nearly all are satisfied who have employed them to any extent. The author's description of the varieties of rheumatism may challenge the opposition of many. Certainly there is room for doubting at least the dogmatic statement of his first page, where, dividing the disease into acute, subacute, and chronic, he says, "The three forms have originally the same causation." For in order that this should be even superficially true the name "chronic rheumatism" should be strictly limited to those cases which have been originally acute, where the chronic condition has been evidently brought about by a single or repeated acute attack, while the so-called subacute variety is a convenient refuge for other forms of joint trouble and constitutional trouble by no means always clearly rheumatic. Now we believe firmly that there is a rheumatism and that there is a gout, the two diseases dif-

fering entirely in the circumstances of their causation and in their effects on the human organism; and we find that Dr. MacLagan at the outset, in describing and defining the varieties of rheumatism, says, "Chronic rheumatism properly so called is a milder form of the subacute variety,"—thereby defining a chronic rheumatism quite unlike that generally described. In fact, chronic rheumatism, according to the author, "is sometimes the precursor . . . of an acute attack,"—"chronic thickening of the fibrous textures involved in the disease." "A sequence of rheumatism" is a condition which exists, when once established, "independently of the rheumatic poison," and is by no means, the author wishes us to understand, chronic rheumatism at all.

Of the duration of the disease the author has necessarily much to say; he places its ordinary term at two or three weeks. The prolonged cases are explained as "those in which the chronic form of the disease follows in the wake of the acute." This, while ingenious, by no means clears up the case, since in such a view we are required to consider the subacute and chronic forms as separate diseases, complicating, invading, and temporarily occupying the unfortunate subject, while we have already been told that they were one and the same disease, produced by the same cause,—that the subacute was only a milder form of the acute, and the chronic often the mildest of all. Yet the author speaks of "this grafting of the chronic on the acute form." In the light of the author's subsequent remarks on the treatment by salicin and salicylic acid this becomes a matter of some interest. Were it not for that, it might be passed over as only a loose method of description.

Of the seat of this disorder the author entertains decided views. It is "not the fibrous tissues generally, but the fibro-serous tissue of the motor apparatus of the body," and "rheumatism is essentially a disease of the motor apparatus." To support this he points to the immunity enjoyed by the periosteum and the dura mater, the fibrous tissue of the liver, spleen, and kidney, the general freedom from attack possessed by the small joints, the articulation of the jaws and ribs, of the atlas and axis. He "never saw or heard of a case in which the articulations of the ribs were involved." All such cases were, of course, gout.

Of the clinical fact that overstrain and fatigue of a part exercise considerable power in a rheumatic attack in determining the loca-

tion of the disease he makes considerable use. "The only internal organ which is habitually the seat of rheumatic inflammation is also the only one whose fibrous textures are habitually subject to strain." The author very properly deems that exposure to damp and cold suffices to produce acute rheumatism. Such exposure, if sufficiently prolonged, may produce gout of a chronic form; but none the less is the author at fault when he says if such were the case it should be "most prevalent in the coldest climate and the coldest weather," for he forgets that extreme cold is dry and dampness is one of his theoretical factors of causation. Any conclusions drawn from the hereditary nature of rheumatism should be closely scrutinized; from the view of an essential contagion or miasm of the disease they tell against it somewhat, as in the case of tubercle, where we must suppose the susceptibility rather than the poison itself to be inherited. The actual fact itself is in dispute. Is acute rheumatism hereditary, or is a certain weakness and vulnerability only of the fibrous tissues hereditary? Do children whose parents were subject to acute rheumatism have it because they, equally with their parents, have suffered from local conditions of cold, dampness, and miasm? The author admits (p. 19) that "the liability to repeated attacks in the same individual equally points to a constitutional predisposition rather than to an external and accidental agency," yet draws from the special characteristics of the disease the conclusion that it is specific and "the result of the action of a special poison."

Special blood poisons the author divides into those which are produced within the system and those which enter from without. He gives us an exhaustive examination of the lactic acid theory, which he demolishes to his own satisfaction. While quoting the experiments of Richardson on the induction of heart lesions by injection of lactic acid, and arguing against their conclusiveness, he fails to mark one cause of doubt which the reviewer witnessed some years ago in a series of similar experiments, where undoubted valvular lesions were found in the dogs injected, but where similar lesions were also found in a second series of dogs killed without experiment and in a condition of apparent health. Dr. MacLagan, however, holds so firmly the miasmatic theory that defects in his own chain of reasoning are of little moment to him. From conditions obviously pointing one way he readily draws a conclusion in the opposite direction.

The lactic acid theory being rejected, the author proceeds to argue for the miasmatic theory. The natural history of rheumatism allies it closely, he thinks, to malarial fevers. Its habitat is similar, its fever is irregular in type; it is, like malaria, uncertain in duration, unless checked by remedies; yet the poison is not the same. Still, he marks the division in rheumatism of two kinds,—intermittent and remittent,—and having established the relationship he gives us an elaborate study of malaria, its nature, and mode of action; and in Chapter X. we read in the opening line, "Acute rheumatism we regard as a form of malarial fever."

In studying the disease the author makes an arbitrary division into rheumatism of the locomotor apparatus and rheumatism of the vasculo-motor apparatus. In these two chapters and the succeeding one on endocarditis, pericarditis, and myocarditis one will find many facts concerning the disease which are generally overlooked, many facts placed in a new and ingenious relationship, and many statements which may challenge dissent from most readers. Read in the light of the most recent views on ulcerative endocarditis, the three last chapters are extremely interesting, though by no means so in the way the author intended.

The author professes to have been led to the use of salicin, with which his name is closely connected, by a study of the plants of low-lying, damp, and rheumatic neighborhoods. As willows and rheumatism both love the water-courses, so, by an easy argument, salicin hates rheumatism; and though the salicylates have almost overpowered the genuine alkaloid, Dr. MacLagan is still faithful to its fortunes, believing it superior in efficacy and safety to its more palatable and cheaper competitors. In the use of his favorite remedy he shows no timidity. "It takes about an ounce of salicin or salicylic acid to remove the acute symptoms. That quantity should be taken within the first sixteen or twenty-four hours." Forty grains every hour is his favorite dose until the acute symptoms begin to yield, then another ounce is administered during the next forty-eight hours, and so on in diminishing quantity, and continued some days after all symptoms of the disease have subsided. Of salicin he says, "It may be gone on with for some time without hesitation, . . . and those treated by it convalesce more quickly than those who take salicylic acid."

In some of the author's recorded cases he reinforces the salicin by bicarbonate of potas-

sium, alone or with potassium iodide. The reason of this he explains by a necessity in some cases for neutralizing the acid (lactic) in the blood and fibrous tissues, while the salicin attacks and destroys the miasm or specific poison of the disease.

In the chapter on "the mode of action of the salicyl compounds in rheumatism" the reader may follow the author's ingenious reasoning, and agree with him if he chooses; but aside from any theory as to its action, we believe that the majority of the profession thoroughly support Dr. Maclagan in the use of the salicylates, and that where dissatisfaction is expressed with the results of this treatment it is because the practitioner has used too small doses from a dread of depression. As to salicin, while its bitterness is a drawback, it is much better borne by the stomach than the mawkish salicylates, and seems to possess certain powers foreign to them. It can undoubtedly arrest the neuralgic pain, which forms the principal source of suffering in many cases. In thoracic rheumatism it acts more certainly and rapidly, and in the case of children its use is freer from that slight suspicion of danger which will intrude in using large doses of the salicylates. We see, in going through the book, no mention of that most valuable salicylate, the salicylate of ammonium,—a salt which theoretically meets any objections urged against the others, and which is less likely to nauseate. It can be prepared extemporaneously by adding in solution fifty grains of ammonium carbonate to sixty of salicylic acid, and has a purely sweet taste and a syrupy consistence.

Ever since the issue of Dr. Maclagan's early paper some ten years ago the reviewer has employed salicin wherever indicated, and is disposed to think as highly of its virtues as does its original discoverer, and it seems to him probable that it may also be useful in other fields than those rheumatic. As a tonic it is decided in its action, as a febrifuge or antipyretic it possesses considerable power, and in obscure malarial attacks it seems to add new force to quinine by its combination. In the vague depression, dull spinal pain, frequent headaches, and general malaise so often brought back to the city from summer sojourn and travel, where quinine fails it will be found often useful, and, although originally an expensive salt, its price is now so low as to render its use in the necessarily large doses feasible everywhere.

The author by no means assents to the view that salicin is converted in the system into

salicylic acid; he considers that it is much more probably converted into saligenin, salivetin, and salicylous acid. This is a very nice point and one upon which opinions may differ; we have none. In the matter of relative safety, however, the author's words are of weight. He asserts that salicin may be freely administered to a system depressed by the toxic effects of salicylic acid, and that under its use the toxic effects and rheumatic symptoms disappear together. Upon neither the brain nor heart has he observed it to act unfavorably. These are valuable points. The remainder of his book is occupied by chapters on the treatment of vascular motor rheumatism, the relation of rheumatism and chorea, cerebral rheumatism and rheumatic hyperpyrexia; and the book, as a whole, forms a treatise on this subject,—original, bright, erratic at times, but of great value, whether the reader coincides with or combats the author's peculiar theories. E. W. W.

A TREATISE ON ELECTROLYSIS AND ITS APPLICATION TO THERAPEUTICAL AND SURGICAL TREATMENT IN DISEASE. By Robert Amory, A.M., M.D., etc.
New York: William Wood & Co., 1886.

This is a well-timed book, and deserves the attention of those who are interested in the scientific progress of electricity in medicine and surgery. It reflects, and is no doubt inspired by, the revived interest which is now being taken in this department of therapeutics, and which is, perhaps, the most rational and healthful that has ever characterized it since physicians first applied electricity to the cure of disease. This reformation (if we may so call it) is no doubt partly due to the great development of both the science and art of electricity in the commercial world. The mercantile spirit has given a stimulus to the thorough investigation of the physical and chemical qualities of electricity, and has also devised methods of producing, handling, applying, and measuring it, which have much increased and systematized our knowledge of what can and cannot be accomplished with this subtle agent. Those persons who had the opportunity to visit the Electrical Exhibition in Philadelphia in 1884, and to critically analyze its best features, could not but be struck with the truth of these observations. They must have recognized that the time had come when it was just as necessary, and almost as easy, for the physician to be exact in his methods, and precise in his results, with electricity as in the cases of any other experimenters and workers with it.

It is true that Dr. Amory has taken up one of the most obscure and involved questions of electro-therapeutics, but one which is probably the very foundation of the science. It is doubtful, indeed, whether the time has come when this subject can be treated in books with more than a small profit. This opinion is confirmed by this book. The subject must be more thoroughly worked upon in the laboratory and the clinic before it can be finished up in the study. The book has the merit, however, of laying out the ground and of reviewing the literature of the subject, while it labors at a disadvantage under a great weight of physiological speculation and many tedious reports of cases.

Electrolysis, as our readers know, is the decomposition of fluids, and substances dissolved in them, by the passage through them of an electric current. It depends upon the polar affinity of the elements forming the fluid, the negative elements seeking the positive pole and the positive elements going to the negative. The decomposition of water is the most familiar example of electrolysis, and may be observed by any one having a galvanic battery. In this the hydrogen seeks the negative pole and the oxygen seeks the positive. This decomposition can be accurately measured, and is in exact proportion to the strength and duration of the current. Thus, for every *coulomb* of electricity there will be evolved 0.1764 c.c. of the mixed hydrogen and oxygen gases. If any simple salt is dissolved in the water, it, too, is decomposed, and the acid collects at the positive pole, while the alkaline base flies to the negative. These acids and alkalis, being thus separated, may, in turn, exert their special chemical actions, and this is what is called the *secondary* action in electrolysis. Thus, in the human body, electrolysis having collected certain acids at the positive pole, these acids would exert their power upon the tissues. It is easy to understand that the more complex the fluids submitted to this process the more complex will be the respective accumulations at the two poles, and the more involved will be the secondary chemical actions and reactions of these accumulations, or *ions*, as they are called. It is right at this point, and because of this complexity, that much obscurity rests upon the subject of electrolysis in the human body. These highly organized tissues, constantly changing in the vicissitudes of health and disease, never exactly alike, often inaccessible to our means of inspection, furnish a problem infinitely more complicated than

simple saline solutions, which can be reproduced at will, and excite the inquiry whether, after all, our procedures must not for a long while remain empirical, and our results be clinical rather than experimental. This has been the fate of many other therapeutic agents.

These elementary facts of electrolysis have, of course, been known for many years, and physicians long ago sought to avail themselves of them. It is one of the merits of Dr. Amory's book (shared to a like extent by no other book in the English language that we know of) that it gives us much information about these attempts. But Dr. Amory does not confine the use of the word electrolysis to the decomposing process above mentioned. In fact, he does not believe that this process can account for many of the clinical facts with which we are acquainted. He believes that the *cataphoric* action of the current, or, as he calls it, electrical *osmosis*, is the cause of many of these effects. He illustrates this as follows: "If two platinum electrodes should be connected with a constant galvanic current from ten or twelve cells, and then be immersed in pure water, the negative or zinc terminal within a porous vessel, and the positive or carbon terminal outside of this porous medium, the water in the inner vessel will accumulate in two hours to a level about one-sixth higher than that in the outside" (p. 291). In other words, there is a flow of the fluid through a porous septum from the positive towards the negative pole. Dr. Amory makes this one physical fact the basis for a vast amount of speculation, which is both wearisome and profitless. He offers few, if any, facts or experimental observations of his own or others to enforce his various theories, but relies very much upon badly-reported cases, which he has collected from authors, some of whom have been very much discredited. This seems to us to be the most serious fault in the book. It becomes in parts as occult and speculative as any electropath could wish, and is, moreover, drawn out with a wordy tedium which we often wish had been spared. The author, for an example, believes that the segmentation and proliferation of protoplasmic cells can be influenced by this process, for, he says, "It is not only that electricity may transport fluid particles *en masse* from the positive to the negative electrode; but this transportation of fluids may induce organic changes by the rapid removal of the pabulum upon which these cells depend for their maintenance and propagation" (p. 290). This may

or may not be true; but it certainly needs not so many closely-printed pages to develop an idea which the author himself introduces as a *may-be*. This biological speculation, on the one hand, and the haphazard application of the current (without measurement, without exact observation and unbiased reports), on the other hand, as in most of the cases in this book, cannot impart to our electro-therapeutics either the dignity of a science or the usefulness of an art. There is truth in both electrolysis and osmosis, and experimental observations, it is hoped, will yet make us much better acquainted with them. In the mean time clinical work may follow such indications as these processes can now give us, and especially report accurately both methods and results. The cases which are compiled in Dr. Amory's book—many of them, at least—seem to us to be so meagrely and badly reported, and with so much prejudice, as to be quite useless. What experimental therapist would think of reporting his results with a new drug, and at the same time omit to mention the dose and about one-half of the details? And yet this is an almost universal fault with electro-therapists. The author's own cases of goitre, treated by galvano-puncture, are decidedly the best and most instructive in the book. We wish he had relied more upon his own observations in other diseases.

This treatise, in spite of the faults which have been mentioned, appears to us to be both useful and suggestive in a number of ways; and, in order to do it perfect justice, as well as to do the reader a service, we will briefly indicate its contents. The first half of the book, or about one hundred and forty-seven pages, is devoted to the theory of the subject. The physical relations of electrolysis and electrical osmosis are given, and the authorities on these abstruse subjects are referred to in sufficient detail. The various forms of batteries are mentioned in about the same manner as in our better text-books on medical electricity. The author uses the word *tension* very often, and in a way that is sometimes confusing. We thought that this word had about seen its last days. We can understand *current-strength* and *quantity*, which are the facts which regulate electrolysis and all other applications of electricity to the human body, but *tension* in electro-therapeutics has become as dubious a term as *high potencies* in another branch of therapeutics. About twenty-five pages are devoted to a theory of the destruction of living tissues by elec-

trolysis, of which we have given our impression above. It all remains to be demonstrated. A chapter upon the methods of employing electrolysis in living tissues is practical and good. The last half of the book is devoted to certain diseases in which electrolysis has been practised, and draws largely upon the experience of those who have made clinical trials of the method, and who are in general best known for their efforts. A table of reported cases has value chiefly as an index. It is too like a skeleton for any one to taste of the meat. We have, however, much from Cinicelli, who has made valuable studies of electrolysis in aneurism, and many other references, which give this book marked literary value. The reader will be interested to read of the cure of a leucoma by galvano-puncture with a delicate needle, and amused to read of another case of the same disease in which, instead of the needle, a *wet sponge* was held over the *closed eye*, and, of course, no cure was obtained. These two cases illustrate the rational practice, which is rare, and the haphazard practice, which is common, in the use of electricity. The author reviews the subject of electrolysis in ovarian tumor, which was heralded some years since as about to abolish ovariectomy, and appears to give more credence to Ehrenstein than would be expected. Ehrenstein claimed to have cured several hundred cases of abdominal tumors, but never gave any particulars that could be relied upon, and was proved by Dr. Mundé to be a visionary.* Dr. Amory thinks that electrical osmosis here plays its part. Sceptics have said that the tumors are reduced by oozing from the punctures. Among many other diseases treated are hydrocele, nævus, and cancer. Some of these cases are undoubted cures, and therefore very valuable. The use of electricity in the hyperplasias of the female pelvis, and in stricture of the male urethra, has not received the notice it requires. Exophthalmic goitre receives a great deal of attention from Dr. Amory, and it is exceedingly irksome to have to read, in such a work as this, *twenty-nine* closely-printed pages of the pathology and symptoms of the disease before we come to the practice. Whatever his theory may merit, it is certain that some of the results obtained by him are very striking and worthy of imitation. Hypertrichosis, or supernumerary and abnormal hairs, and their removal by electrolysis, receives the attention which the

* Transactions of the American Gynecological Association, 1877.

subject deserves in a very complete chapter. One of the closing chapters is devoted to measurements of the current-strength, and testifies to the author's zeal as a scientist. Apparatus is well described, and a general summary brings the work to a close. We may say, by way of final criticism, that the book could have been much more concisely written, and that the whole subject must be more thoroughly established by practice and observation; but, also, that Dr. Amory has rendered a genuine service to those who interest themselves in the use of electricity in disease.

J. H. L.

THE MEDICAL DIGEST, OR BUSY PRACTITIONER'S VADE MECUM: BEING A MEANS OF READILY ACQUIRING INFORMATION UPON THE PRINCIPAL CONTRIBUTIONS TO MEDICAL SCIENCE DURING THE LAST THIRTY-FIVE YEARS. By Richard Neale, M.D. London, etc. Second Edition.

London: Ledger, Smith & Co., St. Mary Axe.

The publishers of Neale's "Digest," desirous of an expression of opinion as to the advisability of issuing an appendix every fifth year, call attention to the subject by a leaflet accompanying the work, the heading of which, "How to Use the 'Digest,'" indicates its purpose. In it the author again protests against the idea that the book is "merely an index" to certain specified journals, and contends that it is far more, a true digest, from whose pages, by a little trouble, the practitioner, without access to the journals referred to, can yet gather an immense amount of valuable information and useful suggestions on any topic that occurs to him. That this claim is true a very little study of the book in the lines indicated by the leaflet will convince any one, for as each reference leads to others, the very titles of the articles give new ideas on the subject.

But we should judge that this use of the book was altogether inferior to the evident use of it as an index after all. As a means of reference to all important medical journal literature in the last thirty-five years it is to the student and writer invaluable, and to the occasional writer still more so. In fact, it is only by means of such a book that elaborate and studied articles can be written, and the issue of another appendix in 1887 will be hailed with joy by thousands of students and writers. The journals which have contributed to form this book, and to research in which the book contributes, are the *Am. Jour. Med. Sci.*, *Braithwaite*, *British Medical*, *Lancet*, *Med. Press and Circular*, *British and For. Med.-Chir. Rev.*, *London Med. Gaz.*, "Royal London Ophthal.

Hosp. Rep.," *Ranking's Abstracts*, *London Med. Rec.*, *Med. Times and Gazette*, *Practitioner*, *Edinburgh Journal*, and a number of standard books besides.

Correspondence.

BICHLORIDE OF MERCURY IN UTERINE CATARRH.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Since January last I have been using a solution of bichloride of mercury as an application to the cervical canal and uterine cavity in cases of chronic mucopurulent discharge. Originally it was suggested to my mind by some considerable success with the same agent in gonorrhœa, as recently recommended. The suspected relation between many chronic inflammatory conditions of the female genital organs and gonorrhœa still further suggested the use of the bichloride, though in much stronger solution. $\frac{3}{2}$ to 1 grain to the ounce of water was the strength I employed, and, on trying it, my success was so much better than ever before that I have continued to use it in all possible cases of the kind. It has several manifest advantages. Applied with the cotton-wrapped applicator, it excites no immediate uterine contraction, as iodine, carbolic acid, and other agents generally do. This enables one to make two, three, or more applications in rapid succession, and affords a much better chance for reaching the entire endometrium. It leaves behind it no coagulated mucus, or film of chemically-altered epithelium, as carbolic acid and nitrate of silver do, to be detached and expelled subsequently by a process almost necessarily involving fresh supuration. A similar solution may, as a final measure, be applied to the whole vaginal membrane as the speculum is withdrawn, and irrigation with hot water or a very weak solution of bichloride continued for some days. In obstinate catarrh of the cervix, with almost endless ropy secretion, I have also had good success, while I do not remember, after many trials, any success worth mentioning with any agent employed previously. In nearly all the cases two or three applications entirely checked discharges of long standing. Sometimes they recurred at the monthlies, but were again checked for good apparently by another application. In two cases single applications did the work, and out of the twenty-three cases treated solely in

this way, two only resisted treatment, and were entire failures.

E. W. WATSON, M.D.

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IS IT SAFE TO GIVE PEPSIN PREPARATIONS WHEN LESIONS OF THE MUCOUS MEMBRANE EXIST?

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—At the time I read the article on pepsin in the September number of the THERAPEUTIC GAZETTE, I was treating what I and my consulting physician considered to be a case of septicæmia following on a dysentery, in which pepsin had been used. This case I will briefly state.

The man was in his prime, temperate, industrious. He came down with dysentery, which yielded in ten or twelve days, with no very extraordinary symptoms. His pulse and temperature subsided, and appetite, with normal discharges, returned. During the last of his sickness preparations of milk and of egg were frequently given in connection with "dyspepsin," with no thought of any danger. When convalescence was so satisfactory, and every symptom favorable for a speedy recovery, on the fourteenth day he was suddenly taken worse,—a chill, pulse 125, temperature 104°, pain in neck, with rapidly increasing purple swelling in left parotid and the surrounding tissues. To this swelling tincture of iodine was applied and proved advantageous in relieving and reducing the swelling, though not wholly saving from suppuration. An active diarrhœa began with the relapse, and continued till the last, hypodermic doses of morphine and belladonna alone seeming to be of any benefit. After three or four days there were some symptoms of peritonitis, though not strongly marked. The mind remained clear, with slight exceptions, till the last, when death took place, twenty-one days from the beginning of the sickness, or seven days after relapse.

What was the matter? Why this set-back, or, rather, this new series of symptoms? He was so carefully watched and treated we know of nothing, unless the pepsin had entered the circulation through the ulcerated bowels and poisoned the blood. Of this I had no idea till I read Dr. Wood's article. Is it possible pepsin is dangerous when conditions exist favorable to its absorption into the circulation? If so, we have a hint to the possible cause of the frequent cases of blood-poisoning in the modern wholesale use of the digestive fer-

ments. It is, indeed, time that the whole subject of these ferments was gone over and the danger pointed out, if danger there be, and the line of demarcation sharply drawn between the cases when their use is safe and when it is not.

At this writing I have a case of typhoid fever, where, a few weeks ago, I should have resorted to pepsin in some form, but now I dare not give it. If pepsin is poisonous to the blood, then it must be regarded dangerous in any case where there is lesion in any part of the alimentary tract over which it may pass and be absorbed.

E. CHENERY, M.D.

65 CHANDLER ST., BOSTON, MASS.,

October 28, 1886.

Notes and Queries.

SQUILL A POISON.

The death in March last of two young children from large doses of a cough mixture containing syrup of squill called attention to the danger attendant on the unrestricted use of this popular cough remedy. A long paper in the last two numbers of the *Lancet* by Dr. E. B. TRUMAN, F.C.S., public analyst for the borough of Nottingham, detailing the results of his examination of the mixture which was used and some other experiments, recalls the circumstances of the case. The mixture which was used contained almond oil, 2 drachms; syrup of violets, 4½ drachms; ipecacuanha wine, 1½ drachms; and syrup of squill, 1 ounce. It caused pains in the legs, a livid appearance of the face, and quick respiration, followed in two cases by death. The post-mortem examination showed that the heart had ceased in systole, a phenomenon which only results in the case of three officinal drugs, viz., digitalis, squill, and green hellebore. The supposition was that digitalis had accidentally been dispensed in place of one of the ingredients of the mixture, and Dr. Truman was asked to make a chemical examination of the remaining portion of the mixture. He did so, but found no indication of the presence of digitalis, and subsequent experiments with syrup of squill, and other ingredients of the mixture, procured from the pharmacist who dispensed it, pointed to squill as being the toxic agent. Samples of the syrup were obtained from other sources, and these, along with the first syrup, ipecacuanha wine, tinctures of digitalis, and green hellebore and digitaline, were used in physiological experi-

ments upon the heart of the frog. The result of the experiments shows that while the glucosidal residue from 30 minims of the fatal syrup of squill caused cessation of the heart's action in thirty-eight minutes, a similar quantity of another sample reduced the beats from thirty to ten in forty-seven minutes, and another had scarcely any action at all. Ten minims of tincture of digitalis reduced the number of beats from thirty-nine to eighteen in twenty minutes, and 110 minims of *tr. verat. virid.* reduced the number from fourteen to six in twenty-five minutes. A proportionate quantity of the fatal mixture also caused cessation of the heart's action. There was no doubt, therefore, that squill was the toxic ingredient of the mixture, and this is the conclusion that Dr. Truman arrived at. The syrup used in this instance had an intense and persistent bitter taste, like that of scillitoxine, the glucoside of squill which arrests the heart's action in systole. From his experiments, Dr. Truman concludes that squill varies in strength, as the different effects of the three syrups show. The outer scales are stronger than the inner, because they contain more scillain; the fresh bulb is stronger than the dried, volatile oil and Landerer's extractive being lost in drying; the bulb gathered in summer is stronger than that gathered in autumn,—in summer the squill contains less sugar, and the increase of sugar in the autumn is probably the result of decomposition of the glucosides; the red variety is stronger than the white. Dr. Truman is also of opinion (1) that squill is not a safe drug to use for routine, and especially popular or lay practice; (2) that being so variable and, when strong, so potent a drug, it should be looked upon by the profession as unsuitable for use until a solution of standard strength can be produced; and (3) that in the mean while its use should be discontinued. These conclusions, although apparently justified by the facts of the case, cannot be accepted straight off. Dr. Truman has undoubtedly done good service in going into the matter so thoroughly, but there are several moot points remaining. The squill which was used for preparing the syrup was not forthcoming, and we cannot therefore say whether it was exceptionally toxic or whether the preparation was improperly made. Moreover, although the pink variety of squill is admitted by the Pharmacopœia, we do not recollect having ever seen it in commerce; certainly it is so uncommon that pharmacists would not use it if it were supplied to them. We are at one

with Dr. Truman on other pharmacological points, and trust that some competent pharmacist will make a thorough chemical examination of the squills of commerce, and determine, if possible, a simple means of ascertaining its strength. An isolated case of poisoning does not justify the proposed discontinuance of the drug, but the caution is necessary for mothers who give their children half-teaspoonful and teaspoonful doses of the syrup when a few drops would act sufficiently as an expectorant. If there were a much weaker syrup—for example, one containing an ounce or two ounces of acetum scillæ in a pint of simple syrup—the likelihood of fatal cases occurring would be very small indeed.—*Chemist and Druggist*, September 11, 1886.

ON RHEUMATISM.

IMMERMANN'S remarks about rheumatism were attentively listened to at the Berlin Congress, though no new features of an etiological or therapeutical nature were presented. The well-known fact of the frequency of the affection in one and the same house was again referred to. Immermann questioned whether cold is productive of rheumatism.

THE REMOTE EFFECTS OF REMEDIES.

At the meeting of the Medical Section of the British Medical Association, the President, DR. BROADBENT, selected for the subject of his address the Remote Effects of Remedies. After referring to the well-known after-effects of alcohol, he alluded to the mental and bodily derangement induced by eating opium, the miserable irresolution and wretchedness of the man who habitually resorts to chloral, and the childish dementia brought on by the prolonged use of the bromides. He thought that coca is already beginning to claim its victims, who gradually develop an excitement which becomes maniacal or an exaltation like that of general paralysis. The subject of gout was given as illustrating the remote effect of remedies. The effect produced by continued and excessive use of colchicum and other drugs having a similar action, and the consequences following the neglect of such treatment which will clear the system of the gout poison, were especially drawn attention to. With reference to the latter he urged: "It can scarcely be too often repeated that all the effects upon the arteries on the one hand and

the heart on the other associated with contracted granular kidney,—viz., arterial degeneration, cerebral hemorrhage, aneurism and dilatation of the left ventricle, and valvular disease,—are just as commonly produced independently of kidney-disease by high pressure in the arterial system due to other causes; and such pressure in an extreme degree may be induced prematurely by the means taken to keep down gout." Another cause of injuriously high arterial tension was the "Banting" treatment of obesity as understood by the public. In this the non-nitrogenous sugars and starches were taken very sparingly, the amount of fluid taken into the system was reduced as much as possible, and the subject lived on a highly nitrogenous diet. The imperfectly oxidized nitrogenized waste present in the blood provoked resistance in the capillaries, and generated tension in the arteries. Exercise and an adequate supply of water, which were generally omitted, were essential to active metabolism and the working off of impurities. Another example of injury given was that furnished in asthma. Certain drugs afford alleviation of symptoms, but many popular powders contain powerful alkaloids, which produce after-effects on the nervous and vascular systems. "When we see the stupefied mental condition and the congested face and eyes, and note the large, weak, sluggish pulse, showing paralysis of the arterial walls, it is clear that such effects cannot be indefinitely repeated with impunity." "The right ventricle loses its tone like the muscular coats of the arteries, and, instead of becoming hypertrophied, yields to the resistance in the pulmonary circulation, and is dilated, finally giving rise to systemic venous stasis and dropsy." A striking illustration of his subject was given by the too careful and restricted diet of certain forms of so-called indigestion. One kind of food after another was left off, but still with the same discomfort and a sense of repletion after food. The appetite being wanting, a starvation point becomes almost reached. Instances of severe neuralgia, spurious attacks of angina pectoris, and serious debility were related as having followed this line of treatment. Again, in the winter indigestion of women and weakly men, the functional energy of the stomach required stimulating by extra food, such as beef-tea, egg-flip, stimulants at meals, and tonics. What was wanted in winter indigestion was protection from the depressing influence of cold or the means of neutralizing it.—*Lancet*, August 21, 1886.

IS PETROLEUM POISONOUS?

The *Archiv de Pharmacie*, No. 3, 1886, gives the following description of a case of poisoning with petroleum:

A woman took with suicidal intent half a pint of petroleum. Soon after ingestion of the substance she experienced a burning sensation in throat and stomach, and complained of intense thirst. She received milk and cold applications to her head. The urine showed during the first four days evidences of being mixed with petroleum, which partly appeared at the surface and partly in a state of an emulsion. On the fifth day no more petroleum was discharged by the urine. The urinary sediment contained numerous epithelial cells, cylinders, and oxalate of lime; a small amount of albumen was also present. In five more days the urine was wholly normal.

The rapid elimination of the petroleum, and the quick disappearance of all morbid symptoms of the case, induce DR. CHOAY, under whose observation the case came, to declare that petroleum is not a poisonous agent.

If there were no other instances of petroleum intoxication recorded in medical literature, we think the presence of cylinders and of albumen to be sufficient evidences for the toxic nature of petroleum.

AN IMPROMPTU STOMACH-PUMP.

DR. CHARLES N. DIXON JONES, of Brooklyn, writes to the *Medical Record*, October 16, 1886, as follows: "Apropos of the article on 'An Impromptu Pump for Stomach Irrigation,' by Dr. S. E. Post, allow me to relate the following instance of inventive ingenuity. About four months ago I provided a patient, suffering with gastric catarrh and dilatation, with the simple siphon apparatus and a cocaine solution, for stomach irrigation. From experience he found that the siphon did not at all times act as satisfactorily as was desirable, so he resorted to the following modification: He obtained a three-way stop-cock, made from gas-pipe. To one limb of the stop-cock he attached the stomach-tube; to the opposite limb a large fountain-syringe was attached by means of rubber tubing; the outlet was connected with a rubber tube, to the extremity of which could be attached a large rubber-bag syringe, such as is commonly used for a flower-sprinkler. The apparatus is worked as follows: The stomach-tube is in-

roduced, and then the stop-cock so manipulated as to allow the fluid to flow directly from the fountain-syringe into the stomach. After sufficient fluid has flowed into the stomach, the stop-cock is turned, so that the fluid may flow back through the outlet. If it does not flow readily, the bag-syringe is attached, and by compressing this a few times a powerful suction force is induced. At the same time compression of the syringe a few times in rapid succession will cause a swashing and churning of the fluid contained in the stomach, so that the walls are thoroughly cleansed. Of course, such an instrument is capable of numerous modifications and improvements, but this gentleman constructed it to meet a special indication, and, as far as I know, independently of any knowledge of the use of the principle involved in medicine."

THE ADVANTAGES AND DISADVANTAGES OF HUMAN AND ANIMAL LYMPH.

The proceedings of the Section of Public Medicine at the meeting of the British Medical Association at Brighton terminated with a paper by SURGEON-MAJOR PRINGLE, on the "Advantages and Disadvantages of Human and Animal Lymph." He pointed out that his object in making this comparison was that, judging from the report of the German Vaccination Commission, published in 1885, and very carefully condensed by Dr. E. J. Edwardes, the preference, as given by this very important commission, was undoubtedly in favor of animal lymph. The necessity advanced by the opponents of human lymph for the substitution of animal for human lymph was based on the following four objections: 1. The supposed deficiency in the protective power of human lymph, owing to some unaccountable deterioration in this principle, caused by the passage of the virus through the systems of so many individuals. 2. The danger to health and life, owing to the possible introduction into the system of syphilis or the infection of erysipelas. 3. The difficulty of obtaining sufficient human lymph for any sudden emergency or great demand. 4. The general objection raised to the withdrawal of lymph for other operations. Animal lymph, the speaker said, was supposed to overcome these four objections, as follows: 1. Animal lymph could never become deficient in protective power, owing to its constant reinvigoration from the calf. 2. The dangers to health and life, owing to the possible introduction into the system with human lymph of syphilis and

the infection of erysipelas, could not occur where animal lymph was employed. 3. As long as suitable calves were obtainable, it was maintained that the supply of animal lymph, to meet any emergency or great demand, was inexhaustible. 4. For the same reason, no possible objection could be raised under this point. Dr. Pringle then met the four objections brought forward against human lymph. 1. The objection under the head of deficiency of protective power. In Dr. Pringle's extensive and prolonged vaccine practice in India, details of which he gave, he maintained that, where carefully and systematically practised by arm-to-arm vaccination, this deterioration was unknown, and this was certainly not due to the absence of smallpox contagion or infection. 2. There was a complete absence in the above practice of any risks as regards syphilitic transference, and the infection of erysipelas was unknown. 3. With a properly instructed vaccine staff this limited supply of human lymph was unknown, and where the number of children was small, the knowledge of storing lymph prevented any difficulties under this head. 4. Mutual confidence between the vaccinator and the parents of the children would satisfactorily overcome any difficulty regarding the withdrawal of lymph for future operations. Dr. Pringle argued against the view that animal lymph was more protective than humanized, and quoted an official report in support of the view that a spurious vaccination could exist for years. Further, that blood-poisoning, although not of a syphilitic character, might follow the use of animal as well as humanized lymph, that animal lymph was incapable of storage or despatch with any certainty, and that, unless squeezed out with clamps and forceps, the contents of six vesicles would only supply sufficient material for the inoculation of one person.—*Lancet*, August 21, 1886.

TINCTURA FERRI CITRO-CHLORIDI (TINCTURE OF CITRO-CHLORIDE OF IRON—TASTELESS TINC- TURE OF IRON).

R Solution of chloride of iron (U. S. P.), 4 ℥; Citric acid, 2100 grs.; Bicarbonate of sodium, 2270 grs.; Alcohol, 4 ℥; Water, q.s. ad 16 ℥.

Dissolve the citric acid in 4 fluidounces of water, heat the solution to the boiling-point, and gradually add the bicarbonate of sodium. When effervescence has ceased, add the solution of chloride of iron, and cool the mixture. Then add enough water to make it measure 12

fluidounces, and finally add the alcohol. Each fluidrachm contains about $7\frac{1}{2}$ grains of dry ferric chloride.

NOTE.—This tincture is approximately of the same strength, in metallic iron, as the official *tinctura ferri chloridi*.—*National Druggist*, September 10, 1886.

ABSYNTHIN.

According to Merck, the bitter element of the *Artemisia absinthium* L. is easily soluble in alcohol, also in chloroform, less soluble in ether, and almost insoluble in water.

As a remedy against fever it has been tried without much, if any, success. Small doses stimulate, larger doses intoxicate and produce nausea. Roux recommends the absynthin in doses of 0.1 to 0.25 grm. twice daily, fifteen minutes before meals, to create appetite and to prevent constipation, for convalescents and in cases of chlorosis. If there exists a tendency to diarrhœa, he objects to its use. The remedy may be given in gelatin-capsules and in connection with other medicines, such as nitrate of bismuth, etc.

EXPERIMENTAL STUDIES OF KEPHIR.

We abstract the following *résumé* regarding kephir from the *Verhandlungen der Med. Gesellschaft zu Würzburg*, 1886, 4, xix. The observations were all made on patients reduced by exhausting diseases, such as diarrhœa, anæmia, and tuberculosis.

1. Kephir increases the urinary secretion appreciably only when used in large quantities.

2. The specific gravity of the urine and the total weight of the solids in the urine sink under the influence of kephir.

3. The nitrogenous tissue-changes are checked.

4. Digestive energy and nutrition in general are invariably raised even in the most exhausted individual.

5. The bodily weight increased materially.

6. The number of the red blood-corpuscles increases.

7. The pains of lung and stomach affections subside in a few days.

8. The sleep becomes more quiet and more refreshing.

9. The body becomes rounder and fuller.

10. The pallor of the face yields to a fresh and red color.

11. Hence we must regard kephir as one of the most effective of all means to recover the

physical powers after a long or exhausting affection.

ON APON.

What is apou? A new antipyretic and hypnotic? Neither, but simply the name* given by DR. POULET to a tincture prepared by himself, according to the *Bull. de Thérapeutique*, as follows:

R Tr. capsici, 200.0;
Ammon. liquidi, 100.0;
Essentiæ thymi,
Hydrati chloralis, aa 10.0;
Alcoholis (sixty per cent.), 1000.0.

The pepper is digested with the alcohol and the ammonia for a month, then the essence and the hydrate of chloral are added to the expressed liquid, and finally the whole is preserved in a hermetically-closed bottle.

Apon applied locally has been found of great value in hysterical pains, general muscular cold, angina, influenza, muscular rheumatism, dysentery, enteritis, hemorrhoids, seasickness, and suppressed sweats. It is applied on a flannel rag, either pure or mixed, with a fatty oil. Internally; 10 to 20 drops may be given in a little water; shortly after that half a glass of water or tea is drank.

IODIDE OF POTASSIUM IN DIPHTHERIA.

DR. STEPF, of Nuremberg, proposed in the *Deutsche Medicinische Wochenschrift*, No. 9, 1886, iodide of potassium as a remedy for diphtheria. He says,—

"Iodine is a direct remedy for diphtheria, because it can be ingested for a long time, and, circulating in the blood, kills the bacteria. We can give iodide of potassium combined with the tincture of iodine; a two to four per cent. solution recommends itself for the first three years of life, and a four to ten per cent. solution for older children, a teaspoonful being given hourly."

Stepf claims to have had success with this mode of medication.

A REMEDY AGAINST EPILEPSY.

R Extr. fab. Calabar., gr. viiss;
Spir. æth., fʒiiss;
Aq. amygd. amar.
(sive Aq. menthæ pip.), fʒvss. M.
S.—Five to eight drops t. d. for children,
Eight to fifteen drops t. d. for adults.

—*Pharm. Zeitschr. f. Russland*, June 1, 1886.

* ἀπονος,—painless.

—THE— Therapeutic Gazette.

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Original Communications.

*ON SUPERABUNDANT ALIMENTATION, AND ON FORCED FEEDING; AND ON THE DIET IN GOUT, URIC ACID, AND BILIOUS LITHIASIS.**

BY DR. DUJARDIN-BEAUMETZ, PARIS, FRANCE.

GENTLEMEN :—In the last lecture I considered the subject of insufficient or spare diet, and showed its application to the treatment of obesity. To-day I shall take up the opposite aspect of the subject, namely,

the effects of superalimentation, and the therapeutic advantages occasionally derivable therefrom.

A diet may be rich in one or all of the alimentary substances described under the head of complete and complex aliments. Sometimes it is the azotized substances which are superabundant, sometimes the amylaceous, sometimes the fatty; drinks may be taken in too great quantity. In this lecture I shall consider chiefly that side of the question which pertains to superabundant azotized alimentation, and its applications to therapeutics, closing with some observations respecting the transformation of azotized matters in the economy.

Superalimentation has been applied to the

* An abstract of two lectures on Hygienic Therapeutics. From advanced sheets.

treatment of certain pathological states, such as consumptive complaints and leanness from whatever cause. Fattening in man is subjected to the same laws as those which have been established by zootechnics. To fatten animals three conditions are necessary: they must be of a certain breed, they must be stabled or otherwise subjected to confinement, and they must be fed with certain kinds of food. As now there are varieties or breeds of animals which fatten with greater or less difficulty, so also in the human species there are breeds as well as individuals which resist all efforts to fatten them. There are also fat men who eat very little, and there are lean men who are enormous eaters; and in the case of leanness as well as of obesity, heredity plays a great part, leanness and stoutness running in families.

But there is a factor which renders difficult the application of the laws of zootechnics to man; I refer to the fact, which I have mentioned before, that brain-work is a cause of denutrition even greater than muscular labor. Hence if we should condemn a man to absolute physical rest, we might not thereby stop all mental activity, and the organic combustions and denutrition which follow. I cannot, then, accept the general statement of Brillat-Savarin: "Everybody can become fat, provided the proper kind of diet be chosen."

Moreover, the pathogeny of leanness is very complex. Gubler distinguishes three kinds, basing his classification on pathogeny: that which results from insufficient food,—starvation leanness; that which results from excessive waste of the tissues, due to the exaggerated combustions of the economy,—consumption leanness; and that which is of a hereditary nature,—constitutional leanness. You readily understand that the therapeutic results which you are to expect will depend more on the cause than on anything else, hence your first care should be to ascertain the circumstances under which the patient's loss of flesh has arisen.

The treatment of leanness comprehends, then, like that of obesity, a pharmaceutical and a hygienic treatment. I shall say but little about the former. Certain remedial agents have been vaunted; it has been claimed that metals, such as mercury and copper, possess fattening properties. Wyman has pretended that fusel oil (or potato spirit) has such properties in the dose of from 5 to 10 drops. This is by no means proved, and there is but one medicament that can be

clearly shown to cause fattening, and that is arsenic. The popular usage which the inhabitants of Lower Austria, Styria, and Carinthia make of arsenic is certainly in conformity with the physiological effects of the arsenical preparations, which stimulate nutrition in general and increase the appetite. In the treatment of leanness as well as of obesity, hygiene plays the principal part; under this head we are to consider exercise and alimentation.

As for exercise, the less of it the better, is the general rule for those who wish to gain flesh, and it is worthy of remark in this connection that the idle and luxurious life to which the women in Turkey are condemned (I allude especially to those in upper life) accounts sufficiently for the *embonpoint* which characterizes them.*

It is alimentation, however, which has the chief rôle in adipose tissue development and increase, and when called upon to treat cases of emaciation, your first duty will be to order foods rich in fat and hydrocarbons. In the first rank comes cod-liver oil, which is always to be ordered when it can be borne, then fat meats, cream, and carbo-hydrates are to be used largely as parts of the daily fare. The following table from De Nedats will be useful as giving you the richness in starch of certain alimentary substances from the vegetable kingdom. Below is a second table giving the percentage of fat in the principal fatty foods:

TABLE OF AMYLACEOUS SUBSTANCES.

	Per cent.
Rice.....	74.10
Indian corn.....	65.90
Wheat flour.....	63.00
Unground wheat.....	59.60
Millet.....	57.9
Buckwheat.....	50.00
Wheat bread.....	42.70
Peas.....	37.00
Rye bread.....	36.25
Beans.....	36.00
Cucumbers.....	16.60
Potatoes.....	15.5

TABLE OF FATTY SUBSTANCES.

	Per cent.
Butter.....	91.00
Fresh bacon.....	66.00
Pork.....	50.00
Mutton.....	40.00

* Meibomius counsels flagellation! as a fattening measure; "it produces," he says, "swelling of the flagellated parts, and causes derivation thither of the nutritive juices!"

	Per cent.
Cooked beef.....	44.79
Raw beef.....	30.00
Yolk of egg.....	30.70
Cream.....	26.00
Neufchâtel cheese.....	41.00
Holland cheese.....	27.50
Parmesan ".....	16.00
Brie ".....	25.70
Eel.....	13.80
Salt herring.....	12.70
Eggs.....	12.50

While in the treatment of obesity soups and stews are forbidden, here they are prescribed. It is well, also, to order much water to be taken with meals. But, I repeat, despite all the care with which you may direct the treatment of leanness, you will often fail, and for reasons which I have mentioned.

In zootechnics, besides the application of the general precepts on the selection of food and the feeding of animals, stuffing is sometimes practised, as is the case with fowls that are to be fitted for market at a given time. For this purpose, besides the ordinary process of cramming down the throat an alimentary paste, certain apparatuses are much in use, such, as the Martin-stuffer, an instrument resembling somewhat the "gavense" of our hospitals.

These methods of gavage we have also applied to man. Two circumstances have seemed to call for gavage: when the individuals refuse to eat, and we have to resort to *forced feeding* in order to save life, or when the stomach rejects food given in the ordinary way, but retains that which is administered by gavage. In cases of the first kind forced feeding is applied to demented persons who are affected with delusions that they are dead, that they have no mouth, stomach, intestine, etc. In order to practise forced alimentation, many devices have been tried to prevent the patient biting with his teeth through the œsophageal tube. The most simple procedure is to pass the sound through the nares. By this tube (which must, of course, be of small calibre) you can easily introduce a thin gruel or a mixture of milk and meat-powder with wine. The meat-powders here render us great service, for their state of cohesion is such that we can readily make of them a nutrient broth which shall be liquid enough to pass through quite small tubes. You will find in the annals of mental alienation a great many cases where life has been prolonged, and even cures effected in melancholic patients, by means of forced alimentation.

Gavage, properly so called, is applied to

cases where the stomach is intolerant and rejects food ingested by the mouth. Since the labors of Debove, and since my own researches, it has been shown again and again that in many circumstances aliments which are introduced directly into the stomach are tolerated, while food swallowed by the patient is rejected by vomiting. In the vomitings of tuberculosis, of pregnancy, in such as are unmistakably of nervous origin, we have been able to feed the patient through the Debove tube. You know that in these cases it is not necessary to pass the tube down into the stomach, for all the purposes of artificial alimentation are accomplished if the end of the tube is made to penetrate only as far as the upper part of the œsophagus. To-day, thanks to cocaine, the passage of the tube is made with great facility.

I once devised a stomach-sound of my own, which I made much use of; but I have had occasion to abandon it for the new Debove stomach siphon made by Galante. I employ only the smaller-sized tubes, and find them both stiff enough and supple enough for the purpose. It is not needful, you understand, to resort to gavage except in cases of vomiting or of total loss of appetite.

When the patient can eat, and with some relish and willingness, you can have recourse to superalimentation without employing gavage. When Debove and I commenced our experimentation on meat-powders we lacked the improvements which have since been made in them. We then used stomach-tubes more than we do now. To-day, save in the special cases which I have mentioned, you can administer the meat-powder directly to your patients. This alimentary preparation, by reason of its high nutritive value in small bulk, is admirably adapted for superalimentation. You may employ mixtures of lentil flour or meat-powder in the form of broth, or you may give the meat-powder alone with chocolate (which constitutes quite an agreeable beverage), or you may incorporate it with milk-punch in the following way: In an empty bowl place a couple of tablespoonfuls of meat-powder; add one or two tablespoonfuls of old rum or Bourbon and half a pint of milk, sweetened *ad libitum*. As for the quantity of meat-powder, you may begin with 100 grammes a day, and gradually increase to 200, 300, and 400 grammes, which may be taken in divided portions during the day.

You all know the remarkable results which have been obtained from superalimentation in the treatment of consumptive diseases.

You will find cases of extraordinary interest recorded in articles by Debove and his pupils, Broca and Wims. I also refer you to published reports of my own and the recent memoir of my interne, Pennel.* You obtain a marked augmentation of weight, a general amelioration, and in certain rare cases an arrest in the march of the tuberculosis. All these results have been confirmed in Germany at the clinic of Griefswald by Peiper, who has shown us that by administering to phthisical patients meat-powder in quantities gradually increasing from 200 to 500 grammes a day, a striking augmentation of weight has been observed, amounting from five to twenty-two pounds in twelve patients out of every fourteen. In one patient the clinical clerk failed, any longer to find bacilli in the sputum, and physical examination showed a diminution in the local lesions. This man had gained seventeen and one-half pounds in thirty-four days. Superalimentation has, then, proved itself of the greatest utility in phthisis, and must henceforth have an important place in the therapeutics of this disease.

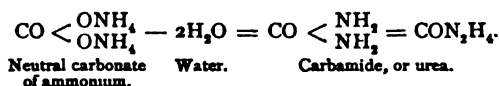
Now that you know the applications of superalimentation to the treatment of consumptive affections, and particularly to that of tuberculosis, I approach one of the most interesting points connected with azotized diet,—namely, the transformation of azotized substances in the economy and their elimination in the state of urea and uric acid. These two bodies play so important a part in the genesis of gout and gravel that I find myself under the necessity of summing up in a few words what we know as to the nature and origin of these effete products of the organism.

Urea is, as you know, represented by the following atomic formula: CON_2H_4 . It is extracted directly from urine, or obtained by synthesis; and you are all familiar, in this regard, with the brilliant achievements of my regretted master, Wurtz, who made urea out of cyanate of ammonium. Béchamp has even claimed that, by the direct oxidation of albu-

minoid matters by means of potassium permanganate, urea might be obtained.

Urea constitutes the basis of a series of complex bodies to which has been given the name of the *uric acid series*. It includes compound ureas and ureides; and for more particulars on the subject I cannot do better than refer you to the thesis on Ureides of the regretted Henninger.†

In a general way, it may be said that all the chemists are agreed in considering urea as an amide; it is an amide with carbonic acid, or *carbamide*. I need not here remind you of what is understood in chemistry by an *amide*; you know that it is an ammoniacal salt minus a certain quantity of water. The formula which I place before you shows that in abstracting from neutral carbonate of ammonium two atoms of water you have the formula of urea:



Urea is found in all the tissues of the economy, and a man secretes on an average twenty to thirty grammes a day. We shall see farther on the circumstances which augment or diminish this secretion.

Like urea, uric acid (whose formula is $\text{C}_5\text{H}_4\text{N}_4\text{O}_6$) is found in the normal state in the urine, but in much less considerable quantity, since in the twenty-four hours the normal excretion in an adult man is only 0.58 gramme. Uric acid forms with bases neutral and acid salts; the most abundant of these salts in the economy is the acid urate of sodium, which constitutes brick-dust sediments in the urine, and with whose varying microscopic appearances you are familiar: daggers, halberds, lozenges, etc.

Many views have been put forth as to the origin of urea and uric acid. The first, and which till within a few years has been the prevalent view, is that urea and uric acid are the result of the oxidation of albuminoid substances. When the oxidation is complete there is formation of urea; when it is incomplete it is uric acid which is formed: urea and uric acid being the waste products of organic combustion. This view was founded on both chemical and physiological experiments.

Wöhler and Liebig, in their great work bearing date 1838, had shown that uric acid, in undergoing oxidation, is transformed successively into allantoin, alloxane, and urea.

* Debove, "Sur le traitement de la phthisie pulmonaire par l'alimentation forcée" (*Bull. de Thérap.*, 30 Novembre, 1881); Dujardin-Beaumetz, "Sur nouveau procédé de gavage" (*Bull. de Thérap.*, 15 Juillet, 1881; *Clinique thérapeutique*, Du Gavage, 4e édition, t. i. p. 404); Broca et Wims, "Recherches sur la suralimentation envisagée surtout dans le traitement de la phthisie pulmonaire" (*Bull. de Thérap.*, 1883, t. cv. p. 289); Pennel, "De l'alimentation chez les phthisiques" (*Bull. de Thérap.*, 1882, t. cii. p. 185); Peiper, "De l'alimentation forcée des phthisiques" (*Deut. Arch. f. Klin. Med.*, 1885, vol. xxxvii.).

† Henninger, "Des Uréides" (*Thèse de Concours*, 1878).

On the other hand, Béchamp, in demonstrating that the direct oxidation of albuminoid matters furnishes urea, had given to this view an experimental proof which seemed indisputable. Experiments made on men and on animals seemed to confirm this position. In examining the quantity of urea and uric acid excreted during the periods of repose and of work, it was shown that there exists between the quantity of urea voided in twenty-four hours and that of uric acid an inverse proportion, and that while during rest the quantity of urea is inconsiderable, that of uric acid is large; conversely, muscular labor causes an increase in the quantity of urea and a decrease in that of uric acid. Ritter's table, which I here place before you, shows this conclusively:

	Quantity of urine.	Total of nitrogen.	Ammonia.	Urea.	Uric acid.
Rest.....	1340 grms.	17.89	0.48	32.90	0.98
A walk of four hours.....	1940 grms.	20.00	0.62	39.25	0.68
A march of four days.....	2120 grms.	20.30	0.59	40.30	0.62

The influence of regimen in the production of urea and uric acid also comes to the support of this view, for the quantity of both of these principles augments with an azotized diet, and diminishes with a vegetable diet and with abstinence.

As for urea the fact is not doubtful, and it is the same with uric acid. Lehmann, in experimenting on himself, found in twenty-four hours the following figures pertaining to the uric acid excretion:

An animal diet.....	1.47 grammes.
A mixed diet.....	1.18 "
A vegetable diet.....	1.02 "

Ranke* has noted still more marked differences, as the following table shows:

An animal diet.....	0.88 gramme.
A vegetable diet.....	0.65 "

But certainly the most interesting experiment is that which Boussingault has performed on ducks fed on different substances, and the results to which he arrived are as follows:

DAILY AMOUNTS OF URIC ACID EXCRETED.

	Grammes.
During entire abstinence from food.....	0.27
After ingestion of balls of clay.....	0.27
" " gum arabic.....	0.29
" " cheese curd.....	10.55

* Ranke, "Beob. und Versuch über die Aussch. des Harns." München, 1868.

	Grammes.
After ingestion of gelatin.....	10.21
After a new dose of gelatin.....	13.21
Under the influence of a diet of fibrin...	9.10
" " " " flesh...	18.91

Lastly, some direct experiments made by Frerichs and Wöhler had showed that in giving dogs uric acid the sum of urea excreted is increased, and the researches of Stockvis, of Zabelin, of Neubauer, are confirmatory of these experiments.†

The theory which would assign a common origin to urea and uric acid seemed then absolutely demonstrated, and had become generally accepted; it considered uric acid as the incompletely oxidized remnant of an intermediate body, which was destined in the organism of mammals for a higher degree of oxidation. You will now see that another theory has arisen by the side of this one which teaches that urea and uric acid have each a distinct origin.

As for urea, everybody is agreed in considering it as the result of a breaking up of albuminoid matters, whether the latter come from food or from tissue-waste. The experiments of Panum, of Hugounencq, of Darier, those still more recent of Quinquaud,‡ show the intimate relation which exists between urea production on the one hand and an azotized diet on the other. But new conceptions arise of the metabolisms taking place as we push still further the study of urea formation.

Abandoning the theory of Liebig and Wöhler, who taught that oxygen produces the combustion of albuminoid matters and their direct transformation into urea, Shultzen and Nencki§ have maintained that urea results from successive modifications effected in amide acids, glyocol, leucine, and tyrosine.

† Zabelin, *Ann. der Chem. und Pharm.*, Bd. lxx., s. 335; Neubauer, *ibid.*, supplém. iii., s. 326; Wöhler et Frerichs, "Modifications que diverses substances éprouvent en passant dans l'urine" (*Journ. für Prakt. Chem.*, 1848, t. lxiv. p. 60).

‡ Panum, "De la courbe de la sécrétion de l'urée et de l'urine pendant vingt-quatre heures après un repas consistant en une certaine quantité de viande" (*Nordisk Med. Archiv.*, vol. vi. n° 1874); Hugounencq, "Expériences nouvelles sur le dosage de l'azote et la production physiologique de l'urée" (*Thèse de Montpellier*, 1883); Darier, "Recherches cliniques et expérimentales sur les variations de l'urée" (*Rev. med. de la Suisse romande*, t. iii. 65 et 121, Février et Mars, 1883); Quinquaud, "Oscillations et formation de l'urée pendant la digestion des aliments azotés" (*Bull. de la Société de Biologie*, 11 Octobre, 1884).

§ Shultzen et Nencki, "Die Vorstufen des Harstoffes" (*Zeits. f. Biologie*, viii.).

In their estimation, albuminoid substances behave in the following manner in the economy: a portion is destroyed by digestion, another portion, the more considerable, is decomposed in the lacteals and portal circulation into bodies exempt from nitrogen, and into amide acids; the latter are transformed into urea, while the former are burned in the organism and pass out in the form of carbonic acid and water.

Schultzen has undertaken a great many experiments on animals and on man to show the direct transformation of glycol and of methyl-glycol, or sarcosine, into urea. These experiments, repeated by Küssner and Salkowski, appear to be demonstrative of the facts advanced by Schultzen and Nencki.

Knierim has put forth another opinion as to the origin of urea; he maintains that urea is not derived from amide acids, but from aspartic acid, and from asparagine.

The same want of agreement is seen when attempts are made to specify the place where this transformation is effected. In the opinion of the majority of physiologists it takes place in all parts of the economy, wherever molecular changes are going on. Nevertheless, the liver has of late years been regarded as the chief centre of urea production, and we see Murchison and Parkes in England, Meissner in Germany, and Brouardel in France, stoutly defend the doctrine of the hepatic localization of urea-genesis, a view which seems to be confirmed by the recent experiments of Von Schroeder,* who, in applying the method of local circulations to the solution of the problem, has shown the production of urea by the hepatic gland. I set aside as not confirmed another hypothesis which has been made, and which assigns to the kidney the function of urea formation, and I come now to recent views which have been set forth as to the origin of uric acid.

Bencke, Voit in Germany, and Lecorché in France, have maintained that uric acid is not a derivative of urea, but of xanthine.

In fact, if you will cast your eyes over the following formulæ, you will notice that hypoxanthine, or sarkine, xanthine, and uric acid differ only by one equivalent of oxygen, and it is easy to see that the last of these bodies might easily arise from oxidation of the two former:

Hypoxanthine, or sarkine, $C_5H_4N_4O$.

Xanthine, $C_5H_4N_4O_2$.

Uric acid, $C_5H_4N_4O_3$.

* Von Schroeder, *Arch. f. Experim. Path. und Pharm.*, Bd. xvi., Heft 5 and 6.

As for the part of the economy where the production of uric acid takes place, there are numerous hypotheses which I shall only mention. Ebstein supposes the marrow of bones to be principally concerned in uric acid genesis, Chrzonszczewski refers this function to the connective tissue, Robin to the fibrous tissue, Ranke to the spleen, Bencke to the white globules, Zaleski to the kidneys, and Meissner and Lecorché to the liver.

I am, myself, inclined to hold to the old view of Wöhler and Liebig as to the origin of urea and uric acid in the economy, and believe that this is the only view having a definite bearing on therapeutics and sanctioned by practice. Therefore I regard urea and uric acid as having a common origin, resulting from the oxidation, more or less complete, of the albuminoid matters of the economy, and I will give you the proofs of this when I come to the dietary of gout. If I have dwelt at length on this subject, it is to call your attention to the numerous works which have appeared thereon, and the importance which in biological chemistry is attached to the study of the metamorphosis of azotized matters. I deemed it also of importance that you should be acquainted with what is known of the origin of these two bodies, urea and uric acid, which by their presence in the economy constitute the uric diathesis, which is so common, and which offers a favorable soil for the development of gouty and rheumatic affections. We shall see numerous applications of the details into which I have entered when we come to the next lecture, in which I propose to speak of the hygienic treatment of gout and gravel.

LECTURE II.

ON DIET IN GOUT, URINARY AND BILIOUS LITHIASIS.

In the preceding lecture I have treated at some length of superalimentation in its effects on the transformation of azotized aliments in the economy, and on the various theories which have been put forth as to the origin of urea and uric acid. I shall have no more to say on these points, and shall now take up the interesting study of diet in the treatment of gout and gravel, affections which result from the accumulation of urea and uric acid in the organism.

In this lecture, concerned exclusively with hygienic therapeutics, I cannot devote much time to the history of gout, or to the numerous discussions which have arisen between the

solidists and humorists with regard to the pathogeny of gout. But I will endeavor to sum up in a few words the recent hypotheses which have been put forth on this subject.

When Garrod published his treatise on gout there was general unanimity in considering it as giving the clearest explanation of the phenomena observed. According to Garrod, gout results from two pathogenic elements,—uricæmia on the one hand, and impermeability of the kidney on the other.

Uricæmia is due to the abundance of urea in the different humors of the economy, and this excess results either from an alimentation too highly azotized, or from insufficient oxidation of albuminoid matters. As for renal impermeability, when existing, it prevents the removal of the effete products of combustion, and thus favors their accumulation in the economy.

This doctrine has not been accepted by all, and to-day there are two quite opposite theories to explain the pathogeny of gout. According to some, as Bouchard and Bencke, gout is the consequence of a failure in the elaboration of albuminoids, and depends on that state of the economy to which they have given the name of *retarded nutrition*. According to others, however, as Lecorché, it is exaggeration in the functions of nutrition which causes the uric diathesis. Let us briefly examine these opposing theories.

Comparing uric acid with other acids of the economy, Bouchard refers gout to the uric diathesis, and endeavors to show that this acid diathesis depends on too slow a destruction of organic substances. Whence come these acids? They result either from the nature of the food ingested, or from vicious or abnormal fermentations taking place in the digestive tube; vicious fermentations being especially favored by dilatation of the stomach. Hence Bouchard, logical with himself, assigns to dilatation of the stomach a preponderant rôle in the pathogeny of gout.

When once formed, these organic acids are eliminated at different points: the sweat gives issue to formic, valerianic, butyric acids; cholic acid is removed by the intestine, and uric, hippuric, and oxaluric acids by the kidneys. But let some circumstance intervene to modify the play of these different emunctories, these acids accumulate in the economy, and gouty manifestations appear. Quite different is the theory of Lecorché.*

Adopting the new views which give to the cell the preponderant rôle in the dissociation of albuminoid elements, views which I have set forth in the last lecture, Lecorché thinks that gout results from exaggerated dissociation of azotized matters, due to inordinate activity of the organic cells; in a word, hyper-nutrition engenders gout.

Whether gout be the result of exaggeration or of retardation in the functions of the economy, everybody recognizes that the augmentation in the blood of uric acid is the essential cause of gout, and that its passage to the state of biuret determines the gouty paroxysms. The same agreement exists from the point of view of the influence of diet on the prophylaxis of gout, and it is the dietetic treatment of this diathesis which I am going to speak of in this lecture.

In the prophylactic and curative treatment of gout, authorities have maintained the advantage of exclusive regimens, and vegetarians have endeavored to show that by means of entire abstinence from purely azotized aliments gout might be made to disappear; but an exclusively vegetable diet has its disadvantages, as Sydenham was one of the first to point out. Therefore it is the better practice to give to gouty persons a mixed diet, and this shall be the text of what I have to say to-day. I shall take as my basis Bouchardat's important work on the treatment of what he calls *the polyuric diathesis*,—i.e., a diathesis characterized by excess of production or insufficiency of elimination of uric acid, or of the biurates. Let us examine, then, the alimentary hygiene of the gouty under the several heads of foods, drinks, time for meals, and exercise.

As for azotized aliments, all kinds of meat may be used, predominance being given to white meats over those which are too highly azotized, such as venison or wild fowl. Be not too free in the use of eggs, fish, oysters, lobsters; old cheese is to be avoided. Fatty foods are to be eaten sparingly.

Vegetables generally are to be permitted, and should have a large place in the bill of fare of the gouty. Among these may be particularly recommended lettuce, chicory, artichokes, cucumbers, cardoons, salsify, celery, carrots, parsnips, and potatoes. Radishes, and especially the black radish, may be permitted, as well as the salads (lettuce, dandelion greens, water-cresses), but spinach and sorrel should be forbidden on account of the oxalic acid which they contain. As for cabbage and cauliflower, which contain much ni-

* Lecorché, "Theoretical and Practical Treatise on Gout." Paris, 1884.

trogen, one should be chary in their usage, as well as the starchy legumes,—beans, peas, and lentils.

As for bread, Bouchardat recommends, as far as possible, to replace this culinary product by potatoes, as is done in England; the importance of this I shall show you more fully when I come to speak of diet in diabetes. As regards fruits, they are all favorable, and the utility of strawberries and grapes has been especially insisted upon. The grape-cure is, in fact, sure to ameliorate the condition of many gouty patients.

As for mushrooms, truffles, and condiments, it is well to exercise great caution in their use.

In reference to drinks much may be said. As a general rule, the gouty person should drink abundantly. Water, which is the best drink, dissolves effete matters out of the tissues and flushes the kidneys, and is the best of diuretics. The alkaline waters are especially to be commended. Wine is not to be absolutely proscribed. What has led to the interdiction of spirituous and fermented liquors is the fact that when taken in excess they are among the most influential factors in the production of gout and gouty paroxysms, and Sydenham truthfully said that "if gluttony engenders gout, the latter is much oftener the effect of wine-drinking."

Wine must, then, be drank very sparingly, and, when taken, should be diluted with alkaline waters. The best wines for gouty people are the old wines that contain but little tannin, such as the light Bordeaux, or the mild pale wines; the sparkling (effervescent) wines, such as champagne, should be absolutely discarded. Scudamore, years ago, pointed out the disastrous effects of champagne on the gouty. The gaseous waters, such as Apollinaris, and the artificial seltzer-waters, should also be interdicted.

The strong beers, such as "stout," Bass's English ale, the Dublin porters, etc., should be proscribed. Garrod has shown us that in England the prolonged usage of these beers produces even in the poorer classes gouty manifestations. There has been much dispute as to the value of cider in gout and gravel. Some authorities (as Dumont) approve of it. Lecorché is, however, inclined to believe that in certain cases cider may be injurious.

In the case of cider, as of beer, the state of purity of the beverage has a good deal to do with the results experienced. As it is the custom at the present day to add alcohol to

the beers of commerce, as well as to cider and perry, one can easily understand the effect of such falsifications in the diet of the gouty. If, therefore, clinicians claim to have seen good therapeutic effects from these fermented beverages, it is because pains were taken to procure an unsophisticated product. It need hardly be said that whiskey, strong wines, "bitters," cognac, etc., are to be absolutely proscribed.

As for tea and coffee, the latter may be taken in moderation, while tea should be forbidden, if for no other reason, because containing oxalic acid, as I shall shortly show you.

The hours for meals should be regulated with care, and the patient should eat slowly and masticate thoroughly. The meal should be plain, and Sydenham's observation on this point is good:

"I believe that the patient should content himself with one sort of food, for if he eats a variety, he is more likely to overload his stomach than if he satisfies his appetite with one kind. You can cure the gout if you can cure the gourmand of his gluttony."

Such are the dietetic rules applicable to gout. They are summed up in the following sentence from Sydenham, whose treatise on Gout (Podagra), published in 1683, still contains some of the best things that have ever been said on the subject of treatment: "The patient must observe great moderation in eating and drinking. On the one hand, he must eat no more food than the stomach can digest, and on the other hand, he must not enfeeble himself too much by abstinence; two extremes equally to be avoided, as I have many times proved on patients and on myself."

But the dietetic treatment of gout, if it be the most important, should, nevertheless, be supplemented by other hygienic measures, which I shall briefly indicate. The functions of the intestines, bladder, and skin must be carefully looked after. The podagrous patient must have a free stool every day, and if this cannot be brought about without cathartics, he should take every morning a glass of Pullna or Hunyadi Janos or Bouchardat's laxative, which consists of a drachm to half an ounce of Rochelle salts in a glass of lemonade.

The gouty patient should also regularly empty his bladder every two hours,—Bouchardat insists much on this necessity of complete evacuation of the bladder at frequent intervals,—and according to him, the untimely death of many illustrious men, and of Claude

Bernard in particular, was owing to the fact that they were habitually negligent in the performance of this important duty.

As for the care of the skin, the cutaneous functions should be maintained in a healthy state. This will be promoted by bathing the whole body and by massage every morning. Bouchardat adds once a week to the water of the bath a teaspoonful of essence of lavender, two of compound tincture of benzoin, and half an ounce of carbonate of potassium.

Exercise plays an important part in the hygiene of the gouty, equal, almost, to that of diet, since by exercise the victim of podagra is able to oxidize and burn his albuminoid substances. Exercise under all its forms, and proportioned to the endurance of the patient, should be prescribed; you know the sentence of our immortal fabulist,—

"Goutte bien tracassée
Est, dit-on, à demi pansée." *

But he that says gout, says gravel, and this leads me to finish this lecture by some remarks about urinary and hepatic lithiasis.

As for renal lithiasis, it is, as you know, comprehended under two great classes, acid gravel and alkaline gravel; the first includes uric and oxalic calculi, the second, lime deposits and the ammoniaco-magnesium phosphates.

As to the treatment of uric acid lithiasis, I have nothing to add to what I have said with reference to the diet of gout and the general régime applicable thereto.

Oxalic acid gravel, called also "poor man's gravel," because it may be engendered by a diet exclusively vegetable, deserves to arrest our attention a few minutes.

There has been much dispute about oxaluria; some pretending with Bird, Prout, Garrod, Furbinger, Ralfe, that oxalic acid is found in the normal state in the blood, constituting, when in excess, the oxalic diathesis; others, on the contrary, as Lecorché and Esbach, maintaining that oxalic acid when thus existing in the blood and excretions always comes from food. Without presuming to settle the dispute, I should be disposed from the stand-point of hygienic therapeutics to adopt the latter view, for if it is by no means proved that incomplete oxidation of saccharine and amylaceous substances may cause oxaluria, everybody is agreed in recognizing the preponderant rôle of vege-

table aliments containing oxalic acid in determining this diathesis.

Hence, whenever you meet with cases of oxalic acid gravel, you ought rigorously to proscribe the usage of foods which contain this acid in relatively large quantities; as a guide you will find the following table from Esbach of use:

THE FOLLOWING SUBSTANCES CONTAIN IN EVERY 1000 PARTS OXALIC ACID IN THE ADJOINED PROPORTIONS:

1. Groceries and Condiments.

	Grammes.
Black tea, in substance....	3.750
" infused five minutes	2.060
Cocoa	3.520 to 4.500
Chocolate	0.900
Pepper	3.250
Chicory (infusion)	0.795
Coffee (adulterated)	0.127
Chervil	0.035
Parsley	0.006

2. Farinaceous Substances.

	Grammes.
White beans	0.312
Garden beans	0.158
Celery, radishes	0.135
Potatoes	0.046
Bread of good quality	0.047
Crust	0.130
Crumb	0.120
Buckwheat flour	0.171
Barley flour	0.039
Indian corn flour	0.033
Wheat bran	0.848

3. Vegetables and Cooked Herbs.

	Grammes.
Sorrel	2.740 to 3.630
Spinach	1.910 to 3.270
Garden rhubarb	2.466
Brussels cabbage	0.020
White cabbages	0.003
Beets	0.390
Green beans	0.060 to 0.212
Salsify	0.070
Tomatoes	0.002 to 0.052
Carrots	0.027
Celery stalks	0.025

4. Salads.

	Grammes.
Chicory	0.103
Endives	0.045
Escarols	0.017
Corn salad	0.016

5. Fruits.

	Grammes.
Dried figs	0.270
Currants	0.130
Plums	0.120
Gooseberries	0.070
Prunes	0.070

* *I.e.*, Exercise is the best dressing.

	Grammes.
Raspberries.....	0.062
Oranges	0.030
Lemons.....	0.030
Cherries	0.025
Strawberries.....	0.012

I must call your attention to certain points connected with the above table. It will be seen that tea contains almost as much oxalic acid as sorrel. There is also a notable proportion in coffee, while in this respect cocoa stands almost first. Hence chocolate, tea, and coffee should be forbidden in oxaluria.

You also notice the large proportion of oxalic acid in bran, hence it is that coarse bread favors the development of oxalic gravel.

As for vegetables, the table shows that it is a mistake to forbid the tomato, while allowing spinach. The latter contains per kilogramme 1.910 to 3.270 of oxalic acid, while tomatoes contain only 0.002 to 0.005.

As for ammoniacal deposits, they are always secondary, and the result of fermentation of the urine, brought about by affections of the vesical mucosa. Here, as Guyon has shown, it is the milk diet which gives the best results, and in suppurative pyelitis and suppurative cystitis you should put your patient on a regimen exclusively of milk.

Hepatic calculi have a quite different origin. They are due to the presence of cholesterine in the biliary passages, and demand a special hygienic treatment. These calculi are constituted almost exclusively of cholesterine and bile pigment.

Cholesterine is, as you know, a non-saponifiable fat, which Berthelot's labors have placed among the alcohols. Under certain conditions, which I shall point out, cholesterine is deposited in the bile-passages. Knowing these conditions, you will be able to direct aright the hygienic treatment of biliary lithiasis.

Two circumstances predispose to the precipitation of cholesterine,—either it is in excess in the bile, or, while existing in only the normal proportion, its precipitation is brought about by modifications in the composition of the bile. Excessive production of cholesterine is generally due to one of two causes,—either to a diet too rich in fats, or to overtaxing the nervous system. Flint, as you are aware, considers cholesterine as a product of disassimilation of the nervous system.

With regard to precipitation by modifications in the bile, Thenard (who has well studied this subject) has shown that cholesterine, while remaining at the normal figure

in the bile, may, nevertheless, be deposited when the bile loses its alkalinity, which is most likely to happen under a diet of animal food. Do not forget also that stagnation of bile in the gall-bladder favors this deposition. The dietetic rules applicable to biliary lithiasis easily suggest themselves from the considerations just stated.

You should suppress from the habitual dietary all fatty substances, carbo-hydrates, sugars, and starches which may engender cholesterine. Among starchy legumes, peas ought especially to be discarded, because containing a fatty body similar to cholesterine, as Hœckel and Schlagdenhauffen have shown, and which they have named *vegetable cholesterine*.*

While on this subject of vegetable cholesterine, I must mention, only to condemn it, a popular notion that carrots constitute an excellent food in hepatic affections, and particularly in biliary lithiasis. This notion seems to be a survival of an idea, based on the old doctrine of similars, called also the doctrine of signatures, whereby a yellow vegetable, like the carrot, was regarded as a specific for jaundice. On the contrary, the composition of the carrot shows it to contain cholesterine, and hence to be unfit for food in biliary lithiasis, as may be seen by referring to Arnaud's analysis.†

Besides the sugar which it contains, the carrot also possesses a hydrocarbon called *carottine*, having for formula $C_{40}H_{56}$, and *hydro-carottine*, which is really a vegetal cholesterine. Its main ingredients are, in fact, sugar, carbo-hydrates, and cholesterine, substances which render this vegetable inappropriate for the diet of persons affected with gall-stone.

You will also avoid the too exclusive use of animal food. Lastly, you will urge the moderate usage of eggs, and if you were to sum up the bill of fare of a person predisposed to gall-stones, you would say, never more than one egg a day, a mixed diet of meat and fresh vegetables. All kinds of meat are permissible, but the patient should discard the fatty parts. All kinds of fresh vegetables are proper, and cannot but be

* Hœckel et Schlagdenhauffen, "Sur la présence de la cholestérine dan quelques corps gras d'origine végétale" (*Acad. des Sc.*, 1886, t. ciii. p. 1317).

† Arnaud, "Recherches sur la composition de la carottine, sa fonction chimique et sa formule; Sur la présence de la cholestérine dans la carotte, recherches sur ce principe immédiat" (*Acad. des Sc.*, 1886, t. cii. p. 1119 et 1319).

beneficial. While starchy foods in general are to be avoided, potatoes may be allowed. Bread should be eaten in great moderation.

Acid fruits are also to be recommended, and Bouchardat* speaks highly of their utility, but sweet fruits are to be avoided, and pastries should be absolutely forbidden. The meals should be near enough together so that the gall-bladder may be frequently emptied. As for drinks, you may allow wine well diluted with some alkaline water, as Vichy or Vals. Free action of the bowels should be promoted, and the bodily exercise should be sufficient to keep the general functions of the economy in a high state of efficiency. Such are the hygienic rules applicable to biliary lithiasis.

In the next lecture I shall consider a subject of the greatest interest, namely, diet in diabetes.

**A CONTRIBUTION TO OUR KNOWLEDGE
OF FEVER, AND THE AGENTS WHICH
PRODUCE OR ARREST IT.**

BY DRs. H. C. WOOD, E. T. REICHERT, AND HOBART
A. HARE.

(Concluded from page 741.)

THE second drug whose action upon the thermogenic functions of the body we have studied is antipyrin. Clinical experience has certainly demonstrated that the influence of this agent upon temperature in febrile diseases is far greater and more constant than is that of quinine; in correspondence with this, we have found that it is much more apt to decrease the temperature of the normal dog than is quinine. At one time in the course of our experiments we thought that this temperature depressing influence was constant. A larger experience has shown that, though very frequently full doses of antipyrin do depress the temperature of the normal animal, in other cases no such effect is produced. If the antipyrin be given in overdoses it produces violent tetanic convulsions, which are accompanied by a very marked rise of the temperature, amounting sometimes to several degrees. This rise of temperature seems to us to be caused, at least in part, by the convulsions, and may not at all be due to any immediate action of the drug. It is very rapidly developed after the coming on of the convulsion. The convulsions are of cerebral origin, although they had the appearance of being spinal, since, after section of the cord,

they failed to appear in the hind legs, although present in the front legs.

In our investigation of antipyrin our first efforts were directed to determining whether it has any constant influence upon the dissipation or production of animal heat in health. In these experiments the antipyrin was given in doses of one-half grain, or of one grain per pound, to the animal; and in all cases the dogs were in as nearly perfect health as we could obtain.

ANTIPYRIN.

Experiment 57.—Dog; weight, 19 pounds.

Time.	Rec. temp.	Box temp.
12.55	103.7°	68.90°
1.55	.....	69.70°
2.55	103.7°	70.45°
		1.55°

3. 10 grains of antipyrin.

Time.	Rec. temp.	Box temp.
3.15	103.7°	70.15°
4.15	.....	70.68°
5.15	103.3°	71.20°
	0.4°	1.05°

RESULTS.

Hourly dissipation of heat.....	94.55
Hourly production of heat.....	94.55
Hourly dissipation of heat.....	64.050
Hourly production of heat.....	61.200

SUMMARY.

Dissipation of heat before antipyrin.....	94.55
Dissipation of heat after antipyrin.....	64.05
Loss of heat dissipation after antipyrin...	30.50
Production of heat before antipyrin.....	94.55
Production of heat after antipyrin.....	61.2
Loss of heat production after antipyrin...	33.3

Experiment 58.—Dog; weight, 20 pounds.

Time.	Rec. temp.	Box temp.
12.05	103.3°	61.70°
1.05	103.5°	62.65°
	0.2°	0.95°

1.15 20 grains of antipyrin.

Time.	Rec. temp.	Box temp.
2.15	103.5°	63.95°
3.15	103.5°	64.80°
		0.85°

RESULTS.

Hourly dissipation of bodily heat.....	115.90
Hourly production of heat.....	118.90
Hourly dissipation of heat.....	103.70
Hourly production of heat.....	103.7

SUMMARY.

Dissipation of heat before antipyrin.....	115.90
Dissipation of heat after antipyrin.....	103.70
Loss of heat dissipation after antipyrin...	12.20

* Bouchardat, "On the Hygienic Treatment of Hepatic Calculi" (*Bull. de Théor.*, t. xcix. p. 145).

Production of heat before antipyrin..... 118.90
 Production of heat after antipyrin..... 103.7

Loss of heat production after antipyrin.. 15.2

Experiment 59.—Dog; weight, 20 pounds, 8 ounces.

Time.	Rec. temp.	Box temp.
11.55	103°	61.40°
12.55	.....	62°
1.55	103°	62.70°
		1.30°

2. 10 grains of antipyrin.

Time.	Rec. temp.	Box temp.
2.05	103°	62.60°
3.05	.....	63.20°
4.05	103°	63.70°
		1.10°

RESULTS.

Hourly dissipation of heat..... 79.30
 Hourly production of heat.....
 Hourly dissipation of heat..... 67.10
 Hourly production of heat.....

SUMMARY.

Dissipation of heat before antipyrin..... 79.30
 Dissipation of heat after antipyrin..... 67.10

Loss of heat dissipation following antipyrin. 32.2

Production of heat before antipyrin..... 79.30
 Production of heat after antipyrin..... 67.10

Loss of heat production after antipyrin.... 32.20

Experiment 60.—Dog; weight, 21 pounds.

ANTIPYRIN.

Time.	Rec. temp.	Box temp.
10.05	104.90°	52.50°
11.05	.....	54.20°
12.05	104.35°	55.60°
	— 0.55°	3.10°

12.10 20 grains of antipyrin.

Time.	Rec. temp.	Box temp.
12.15	104.35°	55.90°
1.15	.....	57.30°
2.15	104.50°	58.65°
	+ 0.15°	2.75°

RESULTS.

Hourly dissipation of heat..... 189.1000
 Hourly production of heat..... 184.7688
 Hourly dissipation of heat..... 167.7500
 Hourly production of heat..... 168.9313

SUMMARY.

Dissipation of heat before antipyrin..... 189.1
 Dissipation of heat after antipyrin..... 167.75

Loss of heat after antipyrin..... 21.35

Production of heat before antipyrin..... 184.7688
 Production of heat after antipyrin..... 168.9313

Loss of heat production after antipyrin. 15.8375

Experiment 61.—Dog; weight, 21.50 pounds.

Time.	Rec. temp.	Box temp.
10.50	103.5°	60°
11.50	.....	60.80°
12.50	104.2°	62.20°

+ 0.7°

2.20°

12.55 21 grains of antipyrin.

Time.	Rec. temp.	Box temp.
1.	104.2°	62.20°
2.	.....	63.10°
3.	103.4°	64.35°
	— 0.8°	2.15°

RESULTS.

Hourly dissipation of heat..... 134.2000
 Hourly production of heat..... 139.8437
 Hourly dissipation of heat..... 131.1500
 Hourly production of heat..... 124.7000

SUMMARY.

Dissipation of heat before antipyrin..... 134.2
 Dissipation of heat after antipyrin..... 131.15

Loss of heat dissipation after antipyrin. 3.05

Production of heat before antipyrin..... 139.8437
 Production of heat after antipyrin..... 124.7

Loss of heat production after antipyrin. 15.1437

Experiment 62.—Dog; weight, 9 pounds. Small box.

ANTIPYRIN.

Time.	Rec. temp.	Box temp.
1.05	104.2°	68.2°
2.05	103°	69.7°
	— 1.2°	1.5°

2.15 9 grains of antipyrin hypodermically.

Time.	Rec. temp.	Box temp.
2.16	103.2°	70.4°
3.16	102.1°	71°
	— 1.1°	0.6°

RESULTS.

Hourly dissipation of heat..... 113.355
 Hourly production of heat..... 105.255
 Hourly dissipation of heat..... 45.342
 Hourly production of heat..... 37.917

SUMMARY.

Dissipation of heat before antipyrin..... 113.355
 Dissipation of heat after antipyrin..... 45.34

Loss of heat dissipation after antipyrin.. 68.015

Production of heat before antipyrin..... 105.25
 Production of heat after antipyrin..... 37.9

Loss of heat production..... 67.35

Experiment 63.—Dog; weight, 5 pounds.

ANTIPYRIN.

Time.	Rec. temp.	Box temp.
11.30	102.6°	71.00°
12.30	102.5°	71.65°
	0.1°	0.65°

12.35 5 grains of antipyrin hypodermically.

Time.	Rec. temp.	Box temp.	Production of heat before antipyrin.....	20.330
12.40	102.5°	71.65°	Production of heat after antipyrin	43.042
1.40	101.1°	72.50°		
	1.4°	0.85°	Gain.....	22.712
RESULTS.				
Hourly dissipation of bodily heat.....	49.1205			
Hourly production of heat.....	48.7455			
Hourly dissipation of bodily heat.....	64.2345			
Hourly production of heat.....	54.7345			
SUMMARY.				
Heat dissipation before antipyrin.....	49.1205			
Heat dissipation after antipyrin.....	64.2345			
Gain of heat dissipation after antipyrin.	15.1140			
<i>Experiment 64.—Dog ; weight, 6 pounds.</i>				
Time.	Rec. temp.	Box temp.		
1.50	103.1°	72.10°		
3.20	104.0°	72.45°		
	0.9°	0.35°		
3.30	6 grains of antipyrin.			
Time.	Rec. temp.	Box temp.		
3.35	104°	72.40°		
5.05	102.9°	73.30°		
	1.1°	0.90°		
RESULTS.				
Hourly dissipation of heat.....	17.6330			
Hourly production of heat.....	20.3330			
Hourly dissipation of heat.....	45.342			
Hourly production of heat.....	43.042			
SUMMARY.				
Dissipation of heat before antipyrin.....	17.6330			
Dissipation of heat after antipyrin	45.3420			
Gain.....	27.7090			
<i>Experiment 65.—Dog ; weight, 9 pounds.</i>				
ANTIPYRIN.				
Time.	Rec. temp.	Box temp.		
10.45	104.4°	66.20°		
11.45	.....	67.15°		
12.45	102.3°	67.95°		
	2.1°	1.75°		
12.55	9 grains of antipyrin.			
Time.	Rec. temp.	Box temp.		
1.20	102.5°	67.75°		
2.20	.....	.....
3.20	101.5°	69.20°		
	1.0°	1.45°		
RESULTS.				
Hourly dissipation of heat.....	66.1237			
Hourly production of heat.....	59.1367			
Hourly dissipation of heat	54.7882			
Hourly production of heat	50.9182			
SUMMARY.				
Dissipation of heat before antipyrin.....	66.1237			
Dissipation of heat after antipyrin.....	54.7882			
Loss of heat dissipation after antipyrin..	11.3355			
Production of heat before antipyrin.....	59.1367			
Production of heat after antipyrin	50.9182			
Loss of heat production after antipyrin.	8.2285			

Antipyrin Experiments on Normal Dogs. Table No. 1.

Experi- ment.	Dura- tion.	Weight of dog.	Dose.	Hourly heat dissipation.				Hourly heat production.			
				Normal.	After drug.	Decrease.	Percent- age.	Normal.	After drug.	Decrease.	Percent- age.
Number	Hours.	Pounds.	Grains.								
57	4	19	10	94.55	64.05	30.500	32	94.550	61.200	33.350	35
58	2	20	20	115.900	103.70	12.200	10.5	118.90	103.70	15.200	12.5
59	4	20.5	10	79.300	67.10	32.20	40.5	79.30	67.10	32.200	40.5
60	4	21	20	189.100	167.750	21.350	11	184.7688	168.9313	15.8375	8.5
61	4	21.50	21	134.200	131.150	130.500	2	139.8437	124.700	15.1437	10.5
62	2	9	9	113.355	45.345	68.015	60	105.255	37.917	67.3580	64
65	4	9	9	66.1237	54.7882	11.355	17	59.1367	50.9182	8.2285	13.5

Antipyrin Experiments on Normal Dogs. Table No. 2.

Experi- ment.	Dura- tion.	Weight of dog.	Dose.	Hourly heat dissipation.				Hourly heat production.			
				Normal.	After drug.	Increase.	Percent- age.	Normal.	After drug.	Increase.	Percent- age.
Number 63	Hours. 2	Pounds. 5	Grains. 5	49.1205	64.2345	15.114	23	48.7455	54.7345	5.9890	12
64	2	6	6	17.633	45.342	27.7090	150	20.330	43.0420	22.712	111

The records of these experiments and the tables in which the results obtained are summarized show that in seven of the experiments there was a decrease in the production and dissipation of animal heat, whilst in two instances both of these functions were distinctly increased. The results obtained are therefore not entirely concordant. The explanation of the two exceptional experiments may, perhaps, be found in the fact that they were made upon very small, feeble dogs, to which was given the largest dose of the antipyrin employed. When administered in very large doses, we have found that antipyrin increases the animal temperature very greatly,—whether by direct or an indirect action is not known. Such increase we have only seen when convulsions have been present, and we are therefore inclined to attribute the rise of temperature directly to the convulsion; but it is possible that the drug may cause increased thermogenesis independently of the convulsive movement. Moreover, it is not at all unlikely that in the exceptional experiments the dogs had a convulsion in the calorimeter, for, unless such convulsion were exceedingly violent and prolonged, it might very well pass unnoticed.

Further, the reasons given during the discussion of quinine—why in calorimetrical experiments with drugs absolutely concordant results are hardly to be expected—are here also applicable.

Whatever may be the correct explanation of the results reached in the exceptional experiments, the whole series show that, in the normal dogs, antipyrin, given in doses of $\frac{1}{2}$ to 1 grain per pound, usually produces a distinct decrease both of heat production and of heat dissipation. In only one of the seven experiments was the decrease in heat dissipation greater than the decrease in heat production. In one experiment the two functions were equally affected; in five experiments heat production was distinctly increased more than was heat dissipation. These facts prove that, if the change in either function is the

cause of the change in the other function, it must be heat production which is dominant,—*i.e.*, is the function primarily affected and affecting the other function. In other words, we must conclude that heat production in normal dogs is in some way primarily lessened by antipyrin, and that such lessening is followed either as an accompaniment or effect by lessening of the heat dissipation.

The question now naturally presents itself, In what way does antipyrin lessen heat production? But before entering upon the discussion of this question it seems wisest to consider the action of antipyrin upon the temperature of dogs in which fever has been produced by the pepsin-peptone. Our experiments upon the subject have all been made on the plan adopted with quinine.

Experiment 66.—Dog; weight, 20 pounds.

PART I.

Time.	Rec. temp.	Box temp.
11.45	102.9°	58.45°
12.45	.....	59.35°
1.45	103°	60.15°
	0.1°	1.70°

2. Injected 12 grms. boiled pepsin into jugular vein.

2.15 Injection ended.

Time.	Rec. temp.	Box temp.
3.20	103°	60.30°
	104.6°	61.05°
	1.6°	0.75°

Time.	Rec. temp.	Box temp.
3.40	104.6°	61.20°
4.40	.....	62.40°
5.40	105°	63.35°
	0.4°	2.15°

RESULTS.

Hourly dissipation of heat before pepsin.....	103.700
Hourly production of heat.....	104.450
Hourly dissipation of heat after pepsin.....	91.500
Hourly production of heat.....	115.500
Hourly dissipation of heat after pepsin.....	131.150
Hourly production of heat after pepsin.....	134.150

Experiment 66.—

PART II.		
Time.	Rec. temp.	Box temp.
11.45	104°	65.85°
12.45	.....	66.80°
1.45	103.2°	67.45°
	0.8°	1.60°

1.50 Gave 12 grms. of boiled pepsin in jugular.

2.00 Gave 20 grs. of antipyrin into jugular.

Time.	Rec. temp.	Box temp.
2.30	104.8°	67.50°
2.30	104°	68.50°
	0.8°	1°

Time.	Rec. temp.	Box temp.
3.35	104°	68.50°
4.35	.....	69.25°
5.35	102.7°	69.90°
	1.3°	1.40°

RESULTS.

Hourly dissipation of heat before drugs	97.600
Hourly production of heat before drugs... ..	91.600
Hourly dissipation of heat after drugs.....	122.000
Hourly production of heat after drugs.....	110.000
Hourly dissipation of heat after drugs.....	85.400
Hourly production of heat after drugs.....	75.650

Experiment 67.—Dog ; weight, 17 pounds.

PART I.		
Time.	Rec. temp.	Box temp.
10.35	105.5°	62.55°
11.35	.....	62.85°
12.35	105.8°	63.45°
	0.3°	0.90°

1. Injected 12 grammes pepsin, boiled, into jugular.

1.05 Injection.

Time.	Rec. temp.	Box temp.
1.20	105.3°	63.60°
2.20	.....	.....
3.20	.....	64.50°
4.20	106.1°	65°
	0.8°	1.40°

RESULTS.

Hourly dissipation of heat before pepsin.....	54.900
Hourly gain of heat before pepsin.....	1.912

Hourly production of heat before pepsin. 56.812

Hourly dissipation of heat after pepsin..... 85.400

Hourly gain of heat after pepsin..... 5.100

Hourly production of heat after pepsin... 90.500

Experiment 67.—Dog ; weight, 17 pounds.

PART II.

Time.	Rec. temp.	Box temp.
12.30	103.5°	59.45°
1.30	.....	59.65°
2.30	103.5°	.....
		0.20°

2.40 Injected 12 grammes pepsin, boiled, into jugular.

2.45 Injection ended.

2.46 Injected 17 grains antipyrin into jugular.

2.50 Injection ended.

Time.	Rec. temp.	Box temp.
3.15	102.3°	59.35°
4.15	.....	.....
5.15	.....	.....
6.15	103°	60.40°
	0.7°	1.05°

RESULTS.

Hourly dissipation of heat before drugs.....	24.400
Hourly production of heat before drugs.....	24.400
Hourly dissipation of heat after drugs.....	42.700
Hourly production of heat after drugs.....	44.975

Experiment 68.—*Fever and Antipyrin.*—Dog ; weight, 22 pounds.

PART I.

Time.	Rec. temp.	Box temp.	Temp. air.
9.20	102.5°	54.50°	52.50°
10.20	.....	.....	.....
11.20	104°	56.20°	65.50°
	1.5°	1.70°	

11.25 Injected 12 grammes pepsin, boiled, into jugular.

11.30 Injection ended.

Time.	Rec. temp.	Box temp.	Temp. air.
11.40	103.3°	55.50°	64°
12.40	.....	57.10°	61.50°
1.40	105.4°	57.75°	61°
	2.1°	2.25°	

RESULTS.

Hourly dissipation of heat before pepsin.....	103.700
Hourly production of heat before pepsin.....	116.075
Hourly dissipation of heat after pepsin.....	137.250
Hourly production of heat after pepsin.....	154.575

Experiment 68.—*Fever and Antipyrin.*—Dog ; weight, 22 pounds.

PART II.

Time.	Rec. temp.	Box temp.	Temp. air.
10.35	104.5°	57.45°	64°
11.35	.....	58.10°	66°
12.35	104.5°	58.80°	68°
		1.35°	

12.55 Injected 12 grammes of boiled pepsin and 22 grains of antipyrin into jugular.

i. Injection ended.

Time.	Rec. temp.	Box temp.	Temp. air.
1.20	102.8°	58.90°	66.50°
2.20	.....	59.85°	65°
3.20	104°	60.65°	75°
	1.2°	1.75°	

Hourly dissipation of heat after drugs..... 106.750
 Hourly production of heat after drugs..... 116.650

We have tabulated the results of these experiments in two sets of tables similar to those which we made concerning quinine, and, as these tables were at that place thoroughly explained, we shall not here give any discussion of the method of their construction.

RESULTS.

Hourly dissipation of heat before drugs 82.350
 Hourly production of heat before drugs..... 82.350

Fever and Antipyrin Experiments. Heat Dissipation.

WITHOUT ANTIPYRIN.				WITH ANTIPYRIN.		
Heat dissipation on first day.				Heat dissipation on second day.		
Exp.	Before pepsin.	First period after pepsin.	Second period after pepsin.	Before pepsin.	First period after pepsin.	Second period after pepsin.
66	R. T. 102.9°-103° D. 103.700	R. T. 103°-104.6° D. 91.500	R. T. 104.6°-105° D. 131.150	R. T. 104°-103.2° D. 97.600	R. T. 104.8°-104° D. 122.000	R. T. 104°-102.7° D. 85.400
67	R. T. 105.5°-105.8° D. 54.900	R. T. 105.3°-106.1°* D. 85.400		R. T. 103.5°-103.5° D. 24.400	R. T. 102.3°-103° D. 42.700	
68	R. T. 102.5°-104° D. 103.700	R. T. 103.3°-105.4° D. 137.250†	R. T. D.	R. T. 104.5°-104.5° D. 82.350	R. T. 102.8°-104° D. 106.750	R. T. D.

* Dog in calorimeter for three hours without interruption.

† Dog in calorimeter for two hours only without interruption.

Fever and Antipyrin Experiments. Heat Production.

WITHOUT ANTIPYRIN.				WITH ANTIPYRIN.		
Heat production on first day.				Heat production on second day.		
Exp.	Before pepsin.	First period after pepsin.	Second period after pepsin.	Before pepsin.	First period after pepsin.	Second period after pepsin.
66	R. T. 102.9°-103° P. 104.450	R. T. 103°-104.6° P. 115.500	R. T. 104.6°-105° P. 134.150	R. T. 104°-103.2° P. 91.600	R. T. 104.8°-104° P. 110.000	R. T. 104°-102.7° P. 75.650
67	R. T. 105.5°-105.8° P. 56.812	R. T. 105.3°-106.1°* P. 90.500		R. T. 103.5°-103.5° P. 24.400	R. T. 102.3°-103° P. 44.975	
68	R. T. 102.5°-104° P. 116.075	R. T. 103.3°-105.4° P. 154.575†	R. T. P.	R. T. 104.5°-104.5° P. 82.350	R. T. 102.8°-104° P. 116.650	R. T. P.

* Dog in calorimeter three hours without interruption.

† Dog in calorimeter two hours only.

Tables of Percentages in Fever and Antipyrin Experiments. Heat Dissipation.

Increase marked +. Decrease marked —.

First day, without antipyrin.					Second day, with antipyrin.			
Experiment.	First period after pepsin.		Second period after pepsin.		First period after pepsin and antipyrin.		Second period after pepsin and antipyrin.	
	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.
66	— 12.200	— 11	+ 27.450	+ 30	+ 24.400	+ 20	+ 12.200	— 30
67*	+ 30.500	+ 35	+ 30.500	+ 35	+ 18.300	+ 76	+ 18.300	+ 76
68†	+ 33.550	+ 25	+ 33.550	+ 25	+ 24.400	+ 22	+ 24.400	+ 22

* Dog was in the calorimeter for both periods (equalled three hours) *without interruption*. For this reason the figures are duplicated in order to come properly into the table.

† Same as above, only the periods equalled two hours instead of three hours.

Tables of Percentages of Fever and Antipyrin Experiments. Heat Production.

Increase marked +. Decrease marked —.

Experiment.	First day, without antipyrin.				Second day, with antipyrin.			
	First period after pepsin.		Second period after pepsin.		First period after pepsin and antipyrin.		Second period after pepsin and antipyrin.	
	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.	Percentage.
66	+ 11.050	+ 9½	+ 29.700	+ 13½	+ 18.400	+ 16½	— 15.950	— 31
67*	+ 33.688	+ 37	+ 33.688	+ 37	+ 20.575	+ 84	+ 20.575	+ 84
68†	+ 38.500	+ 25	+ 38.500	+ 25	+ 34.300	+ 30	+ 34.300	+ 30

* Dog was in calorimeter for both periods (equalled three hours) without interruption. For this reason the figures are duplicated in order to come properly into the table.

† Same as above, only the periods equalled two hours instead of three hours.

An examination of the table of heat dissipation will show that in Experiment 66 there was a much greater dissipation of heat the first hour after the pepsin and antipyrin than in the first hour immediately after the pepsin alone, but if the whole time of Experiment 66 be considered, the increase in the heat dissipation after the pepsin and antipyrin was very distinctly less than after the pepsin alone. This experiment is, therefore, in exact accord with the results reached in 67 and 68, for, it must be remembered, in Experiments 67 and 68 the whole time after the injection of the drugs was studied at one calorimetrical run.

Considering next the table of heat production, we find that the readings are parallel with those of the table of heat dissipation. Taking each of the three experiments as a whole, there is a very decidedly lessened increase of heat production after the injection of the antipyrin and pepsin as compared with the increase after the pepsin alone. On the other hand, there was an augmented increase of heat production for the first hour after the injection of the pepsin and antipyrin in Experiment 66 as compared with the first hour after the pepsin alone on the previous day.

This is exactly as in the heat dissipation. The conclusion must be drawn that antipyrin diminishes in pepsin-peptone fever both heat dissipation and heat production.

When we come to study the question as to whether the heat dissipation or heat production was most profoundly diminished, we find that in Experiment 66 during the three hours in which the animal was in the calorimeter the first day after the pepsin, in round numbers 42 more units of heat were dissipated than ought to have been if the animal had re-

mained without fever. Thus $(27 \times 2) - 12 = 42$, whilst, on the second day after the pepsin and antipyrin, there was no increase in heat dissipation, $24 (12 \times 2) - 0$. In regard to heat production in the same experiment, there was, on the first day after the pepsin alone an absolute increase of 69 units $(29 \times 2) + 11 = 69$; but on the second day there was an absolute lessening of 12 units in the heat production, $18 - 30 = 12$. Experiment 66 may very well be expressed in the following table:

	First day.	Second day.	Difference.
Heat dissipation.....	42	0	42
Heat production	69	— 12	81

It is perfectly plain that heat production was affected in Experiment 67 much more than was heat dissipation.

In Experiment 67 heat dissipation on the first day after the pepsin alone was for the three hours during which the dog was in the calorimeter increased 90 units. For the corresponding period in the second day after the pepsin and antipyrin the increase was 54 units. Heat production was increased the first day 99 units, the second day 60 units.

	First day.	Second day.	Difference.
Heat dissipation.....	90	54	36
Heat production.....	99	60	39

In Experiment 67, therefore, antipyrin affected heat production more than it did heat dissipation.

Computing Experiment 68, and stating the results in tabular form, as in the other similar experiments, we find,—

	First day.	Second day.	Difference.
Heat dissipation.....	66	48	18
Heat production.....	76	68	8

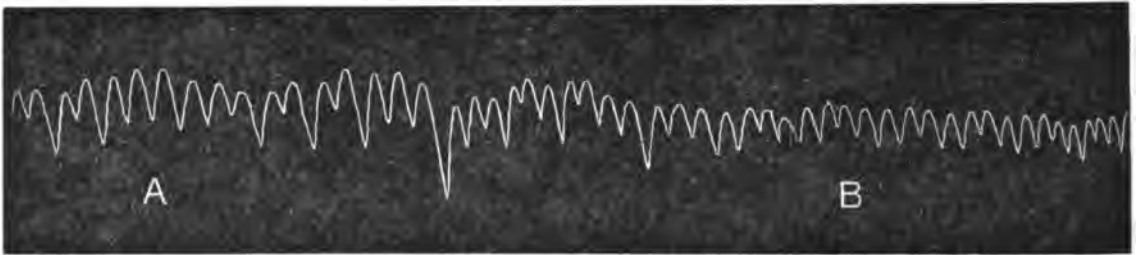
In Experiment 68 heat dissipation was more profoundly affected than was heat production.

So far as relates to the relative action of antipyrin in the two functions of heat dissipation and heat production, our experiments do not yield accordant results. Twice heat production was more affected than was heat dissipation; once dissipation was the more influenced. The most probable conclusion that can be drawn from all our experiments is that antipyrin affects more pronouncedly, both in health and in the fevered dogs, heat production than heat dissipation, but sometimes dissipation seems to be the more influenced. It is possible that if Experiment 68 had been

run during the whole period of the fever instead of the two hours the results would have been in accord with those of 66 and 67, for it was precisely in the latter stages of the fever that the action of the antipyrin seems most pronounced.

The next question which presented itself for solution was, Is this action of antipyrin upon the animal temperature due to an influence exerted upon the circulation, or is its effect produced in any other way? In order to determine this we have made a series of experiments upon the effect of antipyrin on the temperature of the dog suffering from fever. The records of these experiments are as follows:

EXPERIMENT 69.



Tracing showing effect of the injection of 10 grains of antipyrin at 3.05 P.M. Injection begun at A and ended at B.

Experiment 69.—Antipyrin alone; weight of dog, 24 pounds. No pepsin given. Effects of antipyrin on normal temperature and blood-pressure.

Time.	Drug.	Press.	Temp.	Remarks.
2.35	194	104.5°	
2.40	170-194	.....
2.45	5 grs.	180	.....
2.46	170-190	.....
2.47	170-190	.....
3.05	10 grs.	168-170	.....
3.06	Lost blood.
3.07	186-188	.....
3.19.50	160-162	.....
3.20	10 grs.	160-164	.....
3.22.50	160	.....
3.23	15 grs.	160	.....
3.25	180-190	.....	Violent breathing.
3.27	180-196	.....
3.30	178-180	.....
3.50	160-170	103.5°	Stopped breathing for 1 or 2 minutes, then began to breathe hurriedly and slightly.
4.	190-192	102.5°	
4.15	160	102.5°	Breathing in paroxysms for 10 to 20 seconds, then breathing fast and strong for 3 to 10 seconds.
4.30	160-164	102.1°	
4.45	170-180	101.7°	
5.15	164-170	.....	Breathing a little improved; struggling.
5.20	180-200	.....
5.25	170-180	101.5°	Dog when untied strong and lively.

Experiment 70.—Bull-dog; weight, 30

pounds. Effects of antipyrin on normal temperature and pressure.

Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
P.M.					
2.50	.....	180-190	150	105.3°	Has been struggling.
2.53	25 grs.	184-190	150	.....
2.53.02	.....	220-244	not countable.	.....	Tracing irregular dog struggling.
2.55	.....	210-220	120	.....	Straight lines owing to struggles or asphyxia.
2.55.10	20 grs.	195-220	110-120	.....	Struggling.
3.05	.....	200-210	180	104.5°	
3.06	15 grs.	196-200	180	.....
3.06.02	.....	.....	.....	.....	Struggling.
3.20	.....	200	200	.....
3.25	30 grs.	180-200	180	.....
3.25.02	.....	200	120	.....	Struggling.
3.45	.....	.....	.....	105°	
3.50	30 grs.	.....	.....	.....	Violent tetanic convulsions.
4.	.....	.....	.....	107.3°	Tetanus.
4 P.M.					

Experiment 71.—Pepsin and Antipyrin.—Cur; weight, 30 pounds. Pepsin, boiled filtrate, 20 cc.—4 grms. of pepsin.

Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
11.15	.....	196-200	84-86	102.2°	
11.16	4 grms. pepsin.	.....	.....	.....
12.08	4 grms. pepsin.	160-174	.....	103.5°	
12.17	4 grms. pepsin.	160	150	.....
12.19	3 grms. pepsin.	160-164	180	.....

Time.	Drug.	Press.	Pulse.	Temp.	Remarks.
12.30	102.8°	
1.	clots.	.....	clots.	
1.05	140-150	.....	102.5°	
1.30	150	.....	104°	
2.	160	186	104.4°	
2.30	150-160	132	105.5°	
3.	170-190	120	105.5°	
3.30	140-160	138	105.7°	
3.40?	antipyrin, 200 20 or 30 grs.				See tracing. Amount of antipyrin stated is contradictory here.
4.45	200	132	106.7°	Breathing rapid; con- vulsion.
4.55	107.7°	Dog quiet.
5.40	150-160	138	102.3°	Quiet.
5.42	Killed dog.

Dog struggling violently ever since injections. Never quiet more than a minute. Howling.

Of these experiments, the first (Experiment 69) shows that in the normal dog the fall of bodily temperature produced by antipyrin is not the result of any general action upon the circulation, since the arterial pressure stood at from 170 to 190 at a time when the rectal temperature was 104.5° F., and from 170 to 180 after the rectal temperature had fallen 3° F.

The second experiment (Experiment 70) is interesting as showing that, when the violent convulsions produced by antipyrin are fully developed, the rectal temperature rises very decidedly, which rise is probably produced by the convulsion and not by any direct action of the antipyrin.

The third experiment (Experiment 71) proves that the fever produced by pepsin filtrate is controlled by antipyrin without the circulation being notably affected. Under the influence of the pepsin the rectal temperature was put up from 102.2° to 107.7°, the arterial pressure falling from 196 to 170, and then, after the administration of antipyrin, the temperature fell in three-quarters of an hour 5.4° F., with only a very slight further reduction of the arterial pressure. The mere withdrawal of the heat would, we think, be enough to produce this fall of arterial pressure.

In an earlier portion of the present memoir we demonstrated that there is no necessary connection between the arterial pressure and the bodily temperature. In accord with this, the experiments that we have made upon the bodily temperature and blood-pressure under the influence of antipyrin prove that antipyrin diminishes the bodily temperature without affecting the arterial pressure. Our previous experiments have shown that the fall of the bodily temperature produced by antipyrin is the result of a lessened production of animal heat. It follows from all this that antipyrin

lessens the production of animal heat without affecting the arterial pressure. As it is hardly possible that there could be any effect upon the circulation sufficiently powerful to markedly influence thermogenesis without such effect being registered in the general blood-pressure, we are forced to conclude that antipyrin in some direct way influences the chemical alterations of the body.

Up to this point we believe that the matter has been one of experimental determination, but beyond it we are at present forced to theorize simply. Antipyrin may stimulate the inhibitory heat-centre of Setschenow, and thereby check the chemical movements of the organism, or it may have some direct relationship with the various protoplasmic masses of the system, and by an immediate action upon them lessen their chemical activities. The first of these theories or suppositions seems to us most probable, although we cannot at present offer proof of its correctness. In accordance with it the rise of bodily temperature (and apparently of heat production) which we have seen follow the exhibition of overwhelming doses of antipyrin is readily explained as the result of a paralysis of Setschenow's centre. As is universally acknowledged, many nervous stimulants become in overdoses paralyzants; and in accordance with the theory which we at present favor, antipyrin in moderate dose acts as a stimulant to the inhibitory heat-centre, lessens the production of animal heat, and tends to decrease the bodily temperature; but it is possible that when in large quantity it paralyzes the inhibitory heat-centre, and thereby removes the natural check of the chemical movements of the body, which removal is necessarily followed by a great increase in the chemical movements and in heat production.

*CORROSIVE SUBLIMATE IN THE TREATMENT OF CHRONIC BRIGHT'S DISEASES.**

BY JOHN C. PETERS, M.D., NEW YORK.

THIS is comparatively an old remedy, for it was largely used in the New York Hospital as far back as 1842 or 1843. But it is one which experience has shown is exceedingly liable to fall into unmerited neglect, for

* Read before the Section on Materia Medica and Therapeutics of the New York Academy of Medicine, October 20, 1886.

chronic Bright's disease is a disorder which sooner or later must terminate fatally in the majority of instances. Hence all remedies against it are apt to come in disrepute, simply because, however useful and however successful they may frequently be, they will always be summarily thrown aside by some experimenters merely because they do not cure or relieve all cases, under all, even the most unfavorable, circumstances.

I had the good fortune not only to watch the first case, which recovered almost marvellously under this treatment, but many other cases under the care of Drs. John A. Swett, Joseph M. Smith, John H. Griscom, Wotherspoon, Augustus Elliott, W. W. Jones, Israel Moses, Gustavus A. Sabine, and others who were successively attending or house physicians or pathologists of the New York Hospital over forty years ago.

I think, and am in fact very sure, that I first suggested the remedy to my friend and classmate Dr. Wotherspoon, then house physician to the New York Hospital, and he brought its claims before Drs. Swett and Smith, who were the attending or consulting physicians.

The first publication about it was made by Dr. Swett in the *New York Journal of Medicine* for July, 1844. He there gives two cases, first that of Elisha Lynch, who was excessively dropsical, while his urine was not only loaded with albumen, but so scanty that coma was impending. I well recollect the remark of Dr. John A. Swett, "This is a case we will know more about in a few days," meaning that we would see it in the dead-house. Digitalis, apocynum, gamboge, cream of tartar, and elaterium all had failed.

The corrosive sublimate was given, $\frac{1}{8}$ of a grain in 3i doses of tincture of cinchona, every four hours at first, and then, as time pressed, every two hours. It acted decidedly as a diuretic, soon increasing the urine to four pints a day. It removed all the dropsy, except slight œdema of the feet, but much albumen still remained in the urine. Sleep, appetite, and strength returned. It acted as a depurative tonic, and the patient looked well, having greatly improved in flesh and color. Commencing œdema of the lungs had also been removed. Either corrosive sublimate or the cinchona had acted as a blood tonic. The second case was very similar. After the failure of many other remedies, corrosive sublimate was given in $\frac{1}{8}$ -grain doses three times a day for seven weeks, when the patient was greatly improved

in every way. His dropsy was gone, but the albumen remained.

I cannot help pausing here to mark the fact that the remedy was thought worthy of the attention of so great a pathologist, diagnostician, and clinical teacher as was then the late Dr. John A. Swett.

And also to the fact that the corrosive sublimate, with the aid perhaps of the Peruvian bark, acted as a restorative and blood tonic, and depurative.

Whether the mercury merely removed the urea and other blood-poisons, which obtain in uræmia and in some Bright's diseases by means of increased excretion through the kidneys, or whether it absolutely antagonized or neutralized, or in some other way counteracted them, as mercury and iodide of potassium does the syphilitic poison, we know not.

That extremely cautious and painstaking practitioner, the late Dr. Joseph M. Smith, took up the new remedy in 1842, I believe, and possibly before Dr. Swett, but he did not publish anything until 1862. In the mean time, Dr. John H. Griscom, who, like Drs. Swett and Smith, was a consulting physician of the New York Hospital, published two successful cases in 1844 in the *New York Medical Journal*. In one case he commenced with $\frac{1}{16}$ of a grain, but increased the doses to $\frac{1}{4}$ -grain three times a day; they were also given in the tincture of cinchona. Recovery took place, and the albumen disappeared entirely. The other case was notably improved, but was not completely cured. The patient seemed well, but the albuminuria persisted. The same tonic and restorative effects of the remedy before alluded to were noticed.

In 1846 I gathered the experience of the New York Hospital from the house physicians,—Drs. Wotherspoon, Augustus Elliott, W. W. Jones, and Israel Moses,—and from my own notes. All these physicians and Dr. Gustavus A. Sabine, who was the pathologist of the hospital, took great interest in the new treatment, which seemed more successful than any which had been adopted previously. Up to this time about twenty-five cases had been treated, of which five or six had died. Some of the cases which recovered had been very severe, the dropsy was extensive, the urine often almost suppressed, while coma and œdema of the lungs were partially developed. Such cases had usually died promptly under the ordinary treatment, but almost all quickly improved under corrosive sublimate, and often left the hospital apparently quite well. But the albumen and casts disappeared from the urine

in a few cases only, while in some they were diminished very decidedly; in others they even seemed to be increased.

Hence the remedy effected an absolute cure in a few cases only; but it certainly often saved life for the time being. Its most marked obvious effect was an increase in the quantity of urine, which often rose from half a pint to three quarts and more per day, followed by a steady diminution of the dropsy, and gratifying relief from all the most urgent symptoms.

This diuretic effect of corrosive sublimate was then regarded as almost peculiar to Bright's disease, for in a great many patients who took the remedy for other disorders it did not increase the urine in a single case, as far as was noticed or recollected.

About this time strong prejudices were aroused against the use of corrosive sublimate. Dr. Swett, one of its greatest advocates, had died, Dr. Griscom was no longer a hospital physician, and if it had not been for the steady advocacy and even enthusiastic endorsement of it by Dr. Joseph M. Smith, the remedy would have fallen into oblivion.

Dr. Smith did not publish his experience until 1862, in the Bulletin of this Academy for that year. He, as is well known, was also consulting physician to the New York Hospital. He says this energetic preparation has now been used with great success for twenty years in the New York Hospital. He also says it generally induces copious diuresis, and in this way rapidly diminishes the dropsical swellings.

Dr. Bartholow recommends it in chronic interstitial nephritis, when the kidney is small, hard, contracted, rough, granular; in short, sclerosed: viz., when there is hyperplasia of the connective tissue, and that is the principal disease of the kidney. He says he has observed cases in which corrosive sublimate, administered in the small quantities of $\frac{1}{10}$ of a grain, for a lengthened period, effected cures under apparently very unpromising circumstances.

Dr. Loomis is more guarded in his recommendation. He says, "At one time mercurials were extensively employed in chronic parenchymatous nephritis by keeping up its constitutional effects for months. This plan is now partly abandoned, but there are some, however, who claim that the bichloride may be employed. I shall, in considering the cirrhotic kidney, refer to a class of cases in which the administration of this form of mercury is admissible."

He also says, "It has been claimed that the

long-continued administration of mercury in small doses has the power to arrest or prevent connective-tissue development; but there is no evidence that it has such power. Besides, in most instances, the cirrhotic kidney is developed in connection with a gouty or rheumatic diathesis, which most positively contraindicates the prolonged use of mercurials. Mercurials can be employed with possible advantage only in those cases in which cirrhotic kidney is developed in connection with a cirrhotic liver. The bichloride is the preparation usually employed in such conditions." We will see anon that Dr. Loomis also recommends it in waxy degeneration.

Dr. Broadbent says, "In the numerous cases of albuminuria in the London Fever Hospital, towards the decline of the affection, when only small quantities of albumen remain, mercury in limited doses usually leads to the entire disappearance of the albumen."

Fothergill says, "Mercury is a remedy which should be resorted to cautiously. While a quite safe measure in the hands of so careful a physician as Dr. Broadbent, it may be a very dangerous agent in the hands of some."

Dickinson, p. 87, says he gives a mercurial purge as often as he sees a case of acute renal dropsy in an early stage, and presumably also in acute exacerbations of chronic cases.

Harley, p. 312, says, "In the amyloid variety of renal degeneration the judicious employment of the bichloride of mercury is often of much use, but salivation should not be allowed to take place. This rarely happens with corrosive sublimate, as it is so soluble that it passes readily out of the system by way of the kidneys. Port wine and nutritious food," he says, "are useful, almost necessary, adjuvants."

Dr. Loomis (see "Diseases of the Lungs, Heart, and Kidneys") says, p. 516, "If amyloid degeneration depend upon syphilis, you will at once make use of antisyphilitic remedies. Iodide of potassium and mercury are the most prominent remedial agents. Both of these remedies have gained some favor in the treatment of Bright's disease, and there are those who employ indiscriminately one or the other, or both of them. The benefit derived in certain cases from their use is undoubtedly due to their power over syphilitic manifestations. In such cases the long-continued use of small doses of mercurials will generally be followed by marked improvement."

As all the preparations of mercury have lately been decreed to act in the same way, viz., as corrosive sublimate, by means of the muriatic acid in the gastric juice, I may be allowed to quote here the use of calomel in heart and kidney dropsy, as given by recent Hungarian and Austrian physicians, who found that 3-grain doses, three or four times a day, were generally followed by abundant diuresis. Sometimes this diuretic action of calomel appeared on the second day, with such intensity that the patients were scarcely able to retain their urine. This polyuria may last from five to fourteen days.

Digitalis, convallaria, adonis, and caffeine are sometimes found unsatisfactory. The use of digitalis often has to be intermitted. Here it is where calomel comes in play. It has increased the urine within a week from thirty ounces a day to one hundred ounces, and in one case from ten ounces to one hundred ounces.

The conclusions are,—

1. Calomel is a prompt diuretic and hydragogue in cardiac dropsy, its action being more speedy than is that of digitalis.

2. It removes not only œdema of the tissues, but also effusions in the great cavities.

3. Diuresis generally comes on suddenly on the third or fourth day, when it is advisable to discontinue the remedy, and only to resume it when the urine again becomes scanty.

4. Œdema consequent upon nephritis, or obstruction to the portal system, and inflammatory exudations, do not appear to be influenced favorably by the mercurial; and even in cardiac dropsy, when the urine is very albuminous, the action of calomel seems to be retarded, no effect being observed in many cases until the fifth or sixth day. It is, perhaps, in these cases that corrosive sublimate, as a more soluble and active preparation, may act more promptly.

Thus we have seen that corrosive sublimate has been found by some very reputable physicians useful in several of the varieties of chronic Bright's disease.

In chronic catarrhal, or tubal, or parenchymatous nephritis milder remedies, like citrate or acetate of potassium, liquor potassæ, etc., may be tried first, aided by buchu, which Fothergill lauds so much. But sooner or later recourse may be had to corrosive sublimate, for which the fluid extract of buchu will prove a good and acceptable vehicle. We have also seen that it is useful in some cases of cirrhotic or even lardaceous kidney, and there seems no special reason why it

should not also be restorative in that most common and most important variety of kidney-disease, viz.: chronic diffuse nephritis.

This is multiform and harlequin-like in its appearances. The most common form is that which is often called the "atrophied kidney," which is wrongly decreed always to arise from pure interstitial nephritis.

Another variety is "the large white kidney," which is generally attributed to pure parenchymatous nephritis.

Another and peculiar variety of chronic diffuse nephritis is produced by arterio-capillary fibrosis and by cardiac lesions in the place of the ordinary chronic congestions.

Another common form is that in which the kidney is hardly changed at all in its size, color, or gross appearance. Except for the adherence of its capsule it resembles a normal kidney.

This apparent perplexity, multiform appearances, and confusion are easily explained.

In all these different varieties of chronic diffuse nephritis there are morbid changes in the tubes, the Malpighian bodies, the stroma, and the arteries; but sometimes the disease, or rather chronic inflammation, prevails more in one direction or part than in others. In fact, there is often a great variance in the degree of development of the lesions and the gross appearances of the kidneys.

In some cases the chronic inflammation affects more the epithelium of the tubes and the endothelium of the Malpighian bodies, and then resembles *chronic parenchymatous nephritis*, in which the morbid changes are strictly confined to these parts. Pure and simple chronic parenchymatous nephritis, according to Delafield and Prudden, is really not a very common disease. It is marked by the presence of the large white kidney, and its clinical history, of course, very closely resembles that of chronic diffuse nephritis, which has developed most in the direction of the tubes, parenchyma, and Malpighian bodies.

Again, true, pure, and simple *interstitial nephritis*, marked by great development of the stroma or connective tissue, like that in cirrhosis of the liver, does exist, but not nearly so frequently as it does in connection with chronic diffuse nephritis, which has progressed most in this direction. The atrophied kidney is supposed by some to be the invariable attendant on chronic interstitial nephritis, but the larger number of small, hard kidneys belong to the class of chronic diffuse nephritis.

To recapitulate. There are three great varieties of chronic nephritis :

1. Parenchymatous, generally with the large white kidney.
2. The interstitial, with the small, hard granular kidney.
3. The diffuse or general nephritis, which is the most common and important of all, which may attack the parenchyma and tubes predominantly, and then closely resemble pure parenchymatous nephritis, or it may attack the arteries and connective tissue more particularly, and then mimic interstitial nephritis, with the small, hard, granular kidney.

Corrosive sublimate is possibly a specific against the curable or not too far advanced cases of chronic diffuse nephritis, and there is no reason why it should not be equally useful against chronic parenchymatous and chronic interstitial nephritis.

But there will always be a large number of cases of all three of these varieties of kidney-disease in which no absolute and perfect cure is possible, but only palliation and prolongation of life. Hence too much must not be expected, and a hasty rejection or abandonment of a good remedy should not be indulged in. Richardson says in some cases life may be prolonged almost indefinitely, and the bodily and mental powers retained with so little loss that the patient may be equal to most of the duties and some of the pleasures of life. For the kidney is not equally affected throughout all its parts, and the less injured portions may carry on reasonably well the depurative functions. We must conserve what is left of the kidneys.

Theoretically, corrosive sublimate should be a good remedy against the small, hard kidney, and also against the arterio-capillary fibrosis which so often attends it.

Bence Jones says the salts of mercury act chemically on the organic matters with which they come in contact. The more soluble the preparation the more certain is the action on the different organic substances with which it comes in contact. The solubility of corrosive sublimate in a solution of albumen, like that contained in the serum of the blood, is the cause why this substance is capable of passing quickly into every texture of the body, and when there the same increased chemical and vital action takes place; as we see occurs in the gums and salivary glands as among the earliest signs of the constitutional effect of mercury.

The salivary glands are very different

organs from the kidneys, but mercury may act upon the latter somewhat as it does upon the former. Under mercurial action the gums become spongy, the tongue soft and swollen, the salivary glands also softened and enlarged, while they and the mucous membrane of the mouth and throat may secrete mucus and saliva by the pound. All this is very different from, if not the exact opposite of, sclerosis.

It is also possible that it may cause an increased secretion of urine from the kidneys in the same way that it causes pounds of saliva to flow from the parotid, submaxillary, and sublingual glands.

Mercury is one of the few remedies that will reduce and remove the induration of hard chancres, and no disease causes a deeper cachexia than syphilis, which mercury will remove.

Mercury increases all the secretions, including those of the urinary organs. If there happens to be anywhere a recent interstitial deposit of fibrin, or a collection of serum, its absorption is promoted, newly-formed callus is dissolved, and the cicatrices of newly-closed wounds open afresh.

To get the full effect of corrosive sublimate upon the kidneys, salivation must be sedulously guarded against.

The use of mercury in scrofulous and cachectic subjects has always been viewed with some fear. But the orthopædic surgeons of this city use corrosive sublimate fearlessly and very successfully in scrofulous affections of the joints in small or what they call tonic doses, and with such great success that some of them have inferred that more than an usual proportion of these cases are really syphilis in a masked form, so closely resembling scrofula in all its manifestations that a positive diagnosis cannot be made between them.

We may allude here to the large number of cases of chronic arteritis, which are really syphilitic in nature.

Senator, who is almost entirely sceptical about the efficacy of medicines in Bright's disease, approaches this view in a slight degree when he says there is at most (or at least) one drug, viz., iodide of potassium, which must be allowed to possess a certain amount of efficacy in some forms of chronic nephritis. He says he refers to the albuminuria and not to the other symptoms, such as the dropsy and asthmatic attacks, for which we possess really efficacious remedies. Again, in some diseases mercury is known to increase the proportion of red globules in the blood.

Drs. Wm. H. Thomson, Francis Delafield, N. M. Schaeffer, Drs. Boldt, Bunall, and others all spoke favorably of the restorative and tonic effects of small doses of corrosive sublimate in some of the forms of chronic Bright's disease and in some cachectic disorders.

AGAINST THE GERM THEORY OF DISEASE.

BY MORRIS LONGSTRETH, M.D., PHILADELPHIA.

NO subject in medicine during the last ten years has occupied so much thought and given rise to so much research and experiment as the Germ Theory of Disease. Scientists everywhere are busy gaining knowledge concerning the infinitely small organisms suspected of being the cause of maladies; and latterly this subject has become prominent in every household. While the student is searching in his laboratory, with the aid of the microscope, for his microbes, the housewife is ordering the water to be boiled and distributing disinfectants, eating and breathing in fear of the attacks of these little organisms, which she hears that powerful lenses have discovered to be everywhere present. No one has brought this subject so intimately to general knowledge as the French chemist Pasteur, and no one could have been more patient in the minuteness of his experiments.

There have been many theories in past times about the mode of communication of disease which we have not now the opportunity of discussing, and we will simply say that the germ theory of to-day is this: That disease is caused by the action of microbes on our organisms, and that these microbes are infinitely small vegetable growths. Years ago the idea was that disease spread from person to person by a virus, a poison indefinite in character, which had its origin in our bodies, and which could be elaborated either within or without the body, and was spread by immediate contact or through the air. This virus was regarded as a part of our tissues, or was something created as the result of morbid action. Pasteur is trying to teach us that diseased tissues are themselves innocuous and incapable of communicating disease, but that the microbe or bacillus alone is the worker of evil. This is the same doctrine which he promulgated in relation to the fermentations and putrefactions. Liebig held to the old theory in relation to these processes, that it was a transformation or a change of form in

the matter which produced fermentation and putrefaction. The introduction of minute organisms has led us to pass from the old theory to a new one for both fermentation and disease. Thus intimately are these two questions connected, and a review of Pasteur's work shows that he passed directly from his experiments in the breweries to his observations and investigations in the hospital wards and the laboratory. In his mind the theory of germ diseases rests on the same basis as the theory of fermentation, and his proofs of the one are of the same nature as those of the other. Consequently it now behooves us to examine his proofs for his exclusive theory of fermentation, in order that we may be in a position to judge of the validity of his experiments in the artificial production of disease.

Pasteur was enabled to formulate his theory of putrefaction and fermentation through his previous studies of the question of spontaneous generation. His attitude towards this latter subject, prior to the commencement of the investigation, was an unfortunate one for arriving at an unbiased conclusion, since, as he himself says, he undertook the work for the purpose of disproving the possibility of the spontaneous generation of the low forms of life which are found constantly present in putrefying and fermenting matters. Is such a mental condition a fair one towards a subject? Is it not always easy to offer an unlimited number of experiments, so arranged as to support and apparently demonstrate a previously formed opinion? His experiments were based on the same principles as those proposed in the early studies of this question, which in the hands of some investigators had led to one conclusion and in the hands of others to an opposite one. The method pursued in these investigations is essentially the following: Take a solution of organic matters, or of some of their components, boil it for a long time, place it in a perfectly clean flask, exclude the air by sealing, and expose the flask containing the solution to a moderate temperature. Pasteur claims that if all proper precautions are taken no evidence of life will be found within the flasks, even after an indefinite period of time; in other words, that putrefaction and fermentation are consequently prevented, and that spontaneous generation is impossible.

Pasteur is much to be admired for the minute care with which he has performed these experiments, and the unsurpassed skill with which he has arrayed the testimony to logically prove his belief. But do his experi-

ments in spontaneous generation conclusively demonstrate the point at issue in respect to fermentations and putrefactions and the vital question involved in the germ production of disease? His theory of fermentation is an exclusive one. He teaches that lower organisms alone are able to produce a fermentation, and, consequently, microbes only are able to set in motion the train of events which we see in the symptoms and morbid changes in our bodies in disease.

The experiments in spontaneous generation are not conducted in the same manner or under the same circumstances as in nature we see putrefaction and disease occurring. Let us consider what are the important differences distinguishing them. First take Pasteur's culture-fluids. These, he insists, must always be dilute, transparent solutions, from which all traces of organized tissue have been removed. These solutions, he says, are sufficient for the growth and nourishment of these low organisms; why cannot these organisms also spring spontaneously from them, if it is possible, under any circumstances, for them to originate *de novo*? It has never been contended by the defenders of spontaneous generation of low organisms that they could arise from nothing, and it would be well for Pasteur and his followers to comprehend fully the difference between nothing and something. Some of the earlier experimenters, not recognizing this difference, employed the gaseous elements of which the lower organisms are composed—oxygen, hydrogen, nitrogen, and a little charcoal—in their culture-flasks, and waited to see if new organisms devoid of parents would spring into existence. Pasteur is a trifle more generous in his ingredients, in that he uses organic solutions possessing a greater expectation of life because once alive. Trials with such weak dilutions do not tell us much in relation to the putrefaction or the productions of diseased conditions of our bodies. Meat or our own tissues should be used. With such matters, instead of dilute infusions, we should be close to the question whether our tissues can produce a poison or virus capable of causing disease, and whether they can putrefy unassisted by lower organisms. With such materials for experiments, we should be better able to decide whether tissues, dying but not chemically dead, are capable of transforming themselves into those lower organisms which swarm in them after their vital energies have ceased. This was the power which the earlier investigators contended did reside in all or-

ganized tissues. Needham, the earliest experimenter, called it the vegetative or productive force, and it behooves us to learn whether this force does exist, rather than waste time in trying experiments to see if something can arise from nothing.

In these investigations all recognize the necessity for cleanliness of the experiment flasks. A dirty tube vitiates any experiment, either in chemical researches or in those on spontaneous generation. There is no need for Pasteur to insist on such minutiae so strenuously, meanwhile disregarding the main point.

Needham's boiling mutton fat possesses a degree of heat quite as efficient for the destruction of the spores of pre-existing organisms in the culture-tubes as the heat of Pasteur's sterilizing ovens; and yet Needham's mutton gravy swarmed with countless organisms. His experiments resemble Pasteur's, save in the fact that the former used a rich organic material and the latter uses a solution of a little sugar candy, tartrate of ammonia, and ashes of yeast, in all not stronger than 10 parts in 100 of water. The heat of the boiling fat far exceeds Pasteur's sterilizing temperature. The difference in the results cannot be supposed to reside solely in the virtue of the sterilizing oven.

It is the fashion, however, nowadays, if an experiment flask shows any sign of life, to say, if there is no discoverable leak in sealing it, that it has not been long enough in the sterilizing oven. The appearance of life in a flask is at once denounced as a "failure." Failures may be due, of course, either to insufficient sterilization, or to a leak. But how is a "success" (the production of life) ever possible if it is always to be condemned immediately as a failure? These men are so convinced of their theory that if a fiat of the Almighty was sent forth calling into existence a new being, it would be unanimously condemned as a "failure," or as "not sufficiently sterilized."

Another point, much insisted on but really of little moment in these experiments, relates to the admission of air to the culture-flasks. In the older investigations, the air was driven out and excluded in hermetically sealing the flasks, and it was claimed the vacuum or the lack of oxygen prevented the growth of the lower organisms, and delayed or prevented fermentation and putrefaction. Various devices were employed to admit pure air, but it has been found that all necessary conditions are fulfilled by placing in the mouth of the

flasks or culture-tubes a large plug of cotton-wool. This cotton admits air, and at the same time keeps out the atmospheric impurities.

A number of fallacies are to be found in the arguments on spontaneous generation, based on the results of admitting pure or contaminated air. It will suffice to point out one only. Claude Bernard devised the following experiment in refutation of Pouchet's observations. The experiment is one familiar to the older workers, and has been imitated by many since, especially by Pasteur and John Tyndall. The object of the experiment is to show that the boiled contents of a flask remain unchanged if the spores of lower organism floating in the air are prevented from entering, or in other words, that if a culture-flask shows signs of life there must have been a leak. Bernard took two flasks containing sterilized fluid, and, after boiling them, hermetically sealed them, and found they showed no signs of life. Then into one flask the circumambient air was admitted by breaking the seal, the flask being subsequently resealed. Into the other flask superheated air only was allowed to enter after passing through a tube filled with red-hot pieces of porcelain, and then this flask was resealed. The result was that in the first flask, with natural air, life made its appearance; the contents of the second flask remained unchanged. The argument from this result is that, as the air is full of the germs or spores of lower organisms, the spores entered one flask freely, while to the other their entrance was prevented, or they were destroyed before entering, by the red-hot porcelain. This argument would be conclusive if Bernard and others had shown, in the first place, that the air contained spores of lower organisms, and nothing else but the spores; secondly, that the spores did actually enter the flask. But we know that the circumambient air contains a great many things; it may contain spores,—they are very difficult to show, however,—and it certainly does contain portions of the tissue of our bodies,—abundance of this material can be found around a man busy at experimental work; it contains quantities of organic matters and inorganic dust. If all these matters enter the flask when the seal is broken, we are not certain to what source to trace the life of the organisms which subsequently appear. If the spores that enter are fecund and find there a suitable soil, undoubtedly some of the life is due to these spores.

But what shall we say of the minute particles of organic and organized tissue which

also entered through the broken seal? Are they impotent? These experiments are, and from the start have been, undertaken to find out whether organic and organized tissues were impotent to produce fermentation and putrefaction, or whether out of them could arise new beings devoid of parents. If now, when we have arrived at an *experimentum crucis*, we pass into the flask organized tissue together with the spores, and then say it is the spore which produced the subsequent coming life, and the organized tissue had nothing to do with it, we might as well have left the experiment undone. Such an experiment is inconclusive and quite beneath the acute mental perception of a man like Claude Bernard. It is a wonder the French Academy listened to it.

Mr. John Tyndall modifies this experiment, and it becomes apparently more demonstrative to his mind. This able experimenter constructs an air-tight box with a tightly-fitting door. At both ends he has a small window; in front a large pane of glass. To his audience at the Royal Institution he explains this closet, and, darkening the lecture-room, throws a pencil of rays from an oxyhydrogen light through the two end windows. He calls attention to the minute particles floating in the air, which become visible in the ray of light within the closet, as do the motes floating in the sunbeam in a dark room. After the door of the box has been closed, and these particles have settled to the bottom, he again flashes the ray of light through the windows, and shows that the ray is no longer visible, since the minute particles which reflected the light from their surfaces have subsided to the bottom. Now, to complete his experiment he introduces, through previously prepared openings in the bottom of the box, a number of tubes with open mouths, filled with culture-fluids. The contents of these tubes he exposes thus to what he is pleased to call a pure germless atmosphere, and the contents of the tubes remain without signs of life. But he then opens the door of the box, and it becomes flooded, as he says, with the germs and spores of lower organisms, as he demonstrates again by the ray of light, which fairly dances when the door is opened, like a sunbeam in a dusty room. He believes, and has persuaded many others to believe, that he has materialized the supposed spores, and, with a little imagination to aid us, we see them, almost handle them, as they enter the culture-tubes. And his culture-tubes, previously inert in germless air, soon become filled with abundant life.

This experiment of Tyndall's would be very conclusive, also, were we sure that the motes floating in his ray of light are spores of lower organisms, and nothing but spores. Whereas we are positively sure that there are other things, some of them at least organic, in abundance, and are not at all sure that he has shown us, with all his ingenuity, even a single spore or fecund seed of a lower organism. He has never proved that such spores floating in the air are able to reflect light and become visible in the ray of light transmitted through his closet. In fact, these spores are so infinitely small it is impossible to suppose that they can be rendered visible in this manner. Tyndall, so far as we actually know, might have the air of the closet solid with spores without the ray of light discovering their presence or rendering them visible. This experiment, literally interpreted, would lead us to believe that the lower organisms found in the culture-tubes derive their origin not from pre-existing spores but from the dust floating in air; in other words, that their spontaneous generation was probable, and that they might be beings arising *de novo*, devoid of parents.

Such experiments are mere idle trifling with the real question in hand,—mere tricks of a prestidigitateur. Tyndall seems to stand before his audience like a juggler. In one hand he holds a culture-tube containing a sterilized fluid; with the other hand he gracefully catches his spore, claps it into the tube, and, presto! with the tap of his wand the spore has germinated. The majority of the audience trust him as they do the juggler, that he did what he said he did,—put in only a spore; while others think that the success of the trick depended on the other things put in, and are not at all sure there was any spore present.

I have reserved till now the consideration of the boiling, so much insisted on. All the experiment fluids are what is called sterilized, which means that they have been boiled for an indefinite time. This is done to kill the spores in them. In my course of lectures on the Germ Theory of Disease, before the Lowell Institute in Boston, I objected to the boiling process, simply because by this procedure we cut ourselves off from ascertaining the power or force residing in living tissue. Needham claimed that organized tissues possess certain powers, one of which is to transform themselves into lower orders of life. This he called the vegetative or productive force. This force displays itself during the transition of the tissues from life to complete death or dissolution. Long-continued boiling annihi-

lates this power, and deprives us of the opportunity to estimate this force. The urgency for boiling is very strong in the minds of Pasteur and Tyndall and others, because, as they say, the organized tissues are full of the spores of lower organisms. Of course, no experiment is a fair one if the materials used for culture-fluids contain pre-existing spores. Koch, however, denies that the normal tissues contain lower organisms or their spores, and no one by microscopic examination has demonstrated their presence. Nevertheless, granting, for the sake of argument, that some spores of lower organisms do exist in healthy tissues, it must be conceded by all that the tissues of our body are not made up solely and entirely of such spores. There must exist portions of tissues which are not composed of spores. Now, we know the capacity of the spores: they will reproduce their like. What we are trying to find out is what the tissue will do,—tissue devoid of spores, tissue unboiled and in possession of this vegetative force. This is the problem before us in fermentation, putrefaction, and disease, since in nature things and tissues are not boiled.

A critic of my Lowell lectures, while acknowledging the potency of living organic matter, blundered, as have all the others, in some experiments for testing its inherent power or force. He took healthy blood with all possible precaution, and then *boiled* it. Does he suppose that boiled is the same as unboiled blood? Is the potency of ambient living matter the same after boiling as before? Is a man unchanged in his potencies after being put into a tank of boiling water? If he believes that no change has been effected by boiling, then his experiments are fair; if any change has been effected in the blood, then his experiment is not fair.

Let us perform the experiment in a different manner: Take a piece of flesh from a living animal, say from a healthy man whose limb is to be amputated on account of an injury. The part must be protected from the air by thick layers of cotton-wool as completely as Pasteur protects his culture experiments, and be placed in a rigidly cleaned flask. Do everything which Pasteur does except boil it. What happens? If sufficient heat and moisture are present the flesh decomposes and swarms with minute moving particles, which are called lower organisms, or microbes,—the microbes of putrefaction. But the critic exclaims, This experiment will not do, because the flesh has in it the pre-existent spores of the lower organisms. Has

any one shown the spores in such flesh? I do not want to use the flesh if it has such spores in it, but I am not willing to kill the living flesh by boiling for the sake of destroying the spore which is only supposed to be present. The critic says he may be unable to show the spores in the flesh by the microscope, but will undertake to prove their presence in another way, viz., by growing organisms. If an organism appears there must have been spores present, so he says. Here we arrive at the same position again. The critic is convinced of the relationship of spores to organisms, because of his formula, *omne vivum ex ovo*, but he has adduced no proof from his experiment with boiled flesh or blood, because by boiling he has destroyed the vital condition of the flesh in which it can produce organisms, just as freely and abundantly as pre-existent spores can.

If the critic is discontented with healthy tissue, without boiling to kill the spores, for this trial, he ought, if he is fair-minded, to be dissatisfied with the test with flesh after boiling, because he then has to do with dead flesh. The cook in the kitchen could have told him that boiled flesh, with its adherent spores and vital tissue both destroyed, would keep if sealed up. What we want to know is what the vital—that is, unboiled—tissues of our bodies devoid of spores are able to do. If such tissue cannot be obtained the question must remain undecided, because, let it be repeated and remembered, we gain no information from boiled tissues.

Cannot some sporeless tissue be grown, an animal or plant, which has never been defiled with the contact of a microbe of putrefaction? Such tissue could be tested, with fairness, *without boiling* to see if it would putrefy and swarm with organisms. Let me suggest a method of obtaining such an animal. We have all heard of pure cultures of lower organisms. Pasteur's theory of disease-production depends on this method. Pure cultures of lower organisms are obtained by planting, taking the matters containing lower organisms or their spores in culture media suited to their development and growth. From the first culture there is transferred some of the growing organisms to a second, and so on in continuous series until even a hundred generations have been developed. The process is supposed to remove, in the first place, all other organisms, and, secondly, all foreign matters, leaving merely the cultivated organisms. The culture is called pure, because no other organisms are present save

the one desired. Could not a "pure culture" of rabbits be obtained in the same manner? Here is an entirely imaginary experiment. Take a series of a hundred air-tight cages, properly arranged with openings for admitting air and passing in food. The air must be filtered from germs, and the food boiled to destroy the spores. The newly-born rabbits can be transferred from one cage to another by forceps or wires which have been properly sterilized. The hundredth lineal descendant of the original rabbit ought to be as "pure" as the hundredth culture of a microbe, if the work is properly done. There need be no more exposure of the successive crops of rabbits to air-contamination than occurs in inoculating the culture-flask with platinum wire when the plugs of cotton-wool are removed; the forceps or wire for transferring the newly born rabbits from cage to cage can be heated to redness, as is the platinum for inoculation of the culture-fluids, to destroy the spores which stick fast to them. (This heating of platinum wires is part of the legerdemain; I am willing to heat platinum wires to whiteness, if any one will show a spore on such a wire, but I am not willing to deceive myself and others by participating in a trick and calling it a solemn necessity. If there is necessity for heating the wires at all, they should be kept red-hot all the time. After leaving the flame, while passing from the lamp to the culture-flask, and from one culture-flask to the other, the air-spores might alight on the wire, and, horrible thought! contaminate it. To be sure, if the wire is red-hot, the cultured organism will be burned to death, but if the redness is not maintained, contamination is threatened; either way the liability to error spoils the certainty of the experiment.) Here is the way out in regard to the boiling difficulty and the sporeful tissue. Take the hundredth generation of rabbits, kill them by drowning in a sterilized beef-tea, maintain the temperature and the supply of sporeless air, suited to putrefaction. Does any one believe for an instant that those rabbits, thus undefiled by pre-existing spores, having been fed on germless air and sporeless food for a hundred generations, will not putrefy? Does any one think they would remain unchanged forever? If they did, they would form a "monument more lasting than brass" to some future Pasteur. Let no one suggest boiling the rabbits. The necessity for it has ceased; the spores do not exist, and the tissue we do not want killed by boiling it. And now we are in a position to

know what organized tissue devoid of spores can do. Can it or can it not, through its vegetative force, produce the lower organisms, so called, devoid of parents? Can it ferment or decompose without the aid of extraneous microbes?

Who can do this piece of work? It would take a considerable establishment, backed by great wealth, with a corps of assistants, and a judicial-minded, skilled investigator to direct it. The superintendent must not have prejudged the case, he must not start to find proofs that lower organisms cannot arise spontaneously. I know of no one who has the skill, the appliances, and the pecuniary support except Pasteur, but he is lacking in the most essential thing of all,—the open-mindedness. I should be loath to trust the matter in his hands. But until this work has been done we shall not settle the question of spontaneous generation, or know the power or force which exists in our tissues in respect to disease.

Pasteur next turned his attention to the fermentations and putrefactions. On the basis of his studies in spontaneous generation, which had taught him—inconclusively as we have just seen—that no power or force resided in the tissue, he formulated the exclusive theory that no fermentation or putrefaction could take place except from the vital action, the growth of a lower organism. He concluded that, as boiled organic matters were stable until he introduced a fermentative or putrefactive organism, the changes taking place in unboiled matters were due exclusively to these organisms.

I do not question the fact that lower organisms exist in fermenting and putrefying matters; it is their *exclusive* origin from spores which has just been disputed; neither do I question that lower organisms growing in fermentable matters produce certain effects.

The questions which have not been settled are, whether organic and organized matters, other than lower organisms, are in nature in a state prone to decomposition, and are capable, if brought in contact whilst in this natural state, with other organic matters in a stable condition, of communicating a fermenting power or force to such other materials. I question, also, whether Pasteur has shown with entire certainty that the action of the micro-organisms which are present in fermentations is exclusively a vital one.

And to determine this question, it is necessary first to define what is meant by vital action. When an oak-tree is growing in the

forest as the micro-organism grows in the brewer's vat, the tree is abstracting from the soil certain elements necessary to its growth. The removal of certain ingredients from the soil introduces a chain of changes which would not take place unless these ingredients were removed. These ingredients can be abstracted by other means than the growth of trees, and similar changes in the soil will ensue. Hence these changes of the soil are not to be regarded as vital changes, and are by no means to be regarded as necessarily connected with the growth of the tree, since such changes can be effected by other means. The vital changes commence only within the tissues of the organisms. So with respect to man: the purchase of meat is not a vital change; those only are vital changes which take place in the repair of the bodily tissues. The depletion or stagnation of the meat-market cannot be looked upon by any one as a vital process. Vital action, then, is such as is directly concerned with vital changes.

Let us look at some very simple and familiar ferments and fermentations. Every one knows something of pepsin and of its action on certain ingredients of our food. The process is so familiar that it is unnecessary to relate it. Can any one show that this ferment's action is due to a lower organism, to a microbe? It clearly is not, and so furnishes a single exception to Pasteur's law, which breaks up his exclusive theory of fermentation. Here is another instance: take a rich solution of sugar or of beef-soup; let the fluids be thoroughly sterilized by continuous boiling until entirely stable, so that indefinite keeping shows no alteration in them. They must be used when fresh, else they insensibly suffer change (to which the name of fermentation has been denied), losing the original characters. Now take your own finger,—this is *not* an imaginary experiment: it has been done,—thoroughly cleansed by means of any or every possible precaution, save that it must not be boiled to sterilization; stop short of that; then place it in the solution of sugar or beef-soup, being careful to admit no spores of lower organisms from the air. After the finger has been kept in the solution for some time, say until the skin begins to bleach, remove it and place the solution in a warm place. What will happen to it after a time? Why, it will rot. The word rot is used advisedly to express collectively the process found to take place in all the fermentations, decompositions, and putrefactions,—use what term we will to express them, as they are all similar, varying merely

in the matters present and the resulting products, and also—as Pasteur would affirm—in the organism which is on hand. And his statement we may credit without believing in the vital necessity of that organism. Does any one affirm that the action of the finger on the sugar solution is a vital action? Certainly it is not so in the sense Pasteur would have us believe that his microbes have a vital action or in alcoholic fermentation. But then it is quite probable that Pasteur does not understand what vital action is. He may have mistaken another sort of action for vital action.

How is the action of the finger on the sugar solution to be explained? If one examines the solution microscopically, one finds in it particles of the outer skin, which, alive when placed in the solution, separate from the skin and float off into the liquid, dying but not dead, only on their way to death and disintegration. These particles being in a state of unstable equilibrium, ready to disintegrate with the heat and moisture, communicate their unstable state to the solution, which had been rendered stable by prolonged boiling. In the solution rendered unstable by the introduction of a pure, clean, but unstable substance, the finger, we have exhibited a certain process. This process differs from Pasteur's fermentations on account of the different agent employed to start the process. The process, however, is of the same nature as his, and is certainly not a vital process, neither is it due to a lower organism.

One word in regard to the method of cleansing the finger. I have said that every precaution was allowable to render the finger clean. The experiment can be readily spoiled and the brilliancy of its teaching marred by the way the cleaning is done. Cleaning is now generally effected by antiseptic agents. Suppose it to be done in the experiment by corrosive sublimate; the corrosive sublimate must be removed from the finger; none of that substance must go into the solution of sugar. Nothing else is wanted to test the merits of a sugar solution and a finger but sugar and a clean finger. This condition of cleanliness towards corrosive sublimate and everything else must be particularly insisted on, because corrosive sublimate prevents every fermentation.

Here is another experiment which it is desirable that Pasteur should try. It contains a vast amount of instruction, looked at from the proper point of view. His theory is that the changes seen in fermentation are due to the vital action of the lower organisms on the

fermenting fluid. Could he not grow some pure cultures of the lower organisms connected with a particular kind of fermentation, and then take a handful of them and place them for an instant in the solution? Or, as perhaps the instantaneous immersion would not be needfully long, could he not arrange the flask so that the organism should grow not in the fluid, but in the air on a shelf above it, so placed that the surface disintegrations from the growing fungus—the leaves and bark, as it were, of these little vegetables—would fall into the fluid? By an experiment arranged in this manner Pasteur would be able to tell us whether the fermentation was the result of vital action, or came from the power communicated to the sugar solution by the dying disintegrating particles of the fungus dispersed through it. Until he has told us this, and clearly made apparent this distinction, his theory of fermentation is not worth the paper it is written on. This method of performing the experiment brings it in conformity with the trial of the finger, sugar, or beef-soup solution, and Pasteur will find the result to be the same.

The experiment can be made in another way. Take a piece of tissue, say of liver, kept in a preservative solution in which it will remain indefinitely without change. After a time start a mould to grow in the upper part of the flask in which the specimen is kept. As the fungus dies the disintegrating particles drop down, and coming in contact with the preserved liver, start in motion its hitherto stable constituents, and the disintegrating or rotting process extends to it. Doubtless Pasteur would reject such a method of trial, because, forsooth, the liver had not been “rigidly” enough boiled, or perhaps because it would militate strongly against his theory,—and it is not pleasant to have a theory upset which one has proved so carefully.

The question of fermentation is the reverse one of spontaneous generation. In the latter, organic materials are sterilized by boiling to see if they are then able to originate organisms *de novo*; in fermentation, organic materials are sterilized and then inoculated with an organism to induce a fermentation. Each of these experiments involves an error: in the one is first destroyed the force capable of generating a new organism, in the other the inoculation is made with organisms floating in or mixed with other matters in a state of unstable equilibrium, since it is impossible to separate the organisms

from the matter and introduce merely the organism to the sterilized fluids, and hence we are unable to distinguish which of the two—the organism or the unstable matter—is the real efficient agent in the procuring of a fermentation.

If Pasteur has not shown us conclusively that organized tissues (unboiled) are powerless to cause fermentation, putrefaction, and the like, why may we not believe that emanations from our body in a diseased condition are capable of communicating disease? Diseases have been compared to fermentations, giving the name zymotic to some of them. In disease the tissues of our body become altered, and are separating and being discharged by various channels more rapidly than in health. Why cannot these particles of tissue, coming in contact with another person, be supposed capable of communicating disease, as we have seen the minute particles of finger produce putrefaction in the sugar solution? Why is it necessary, or even rational, to call in the aid of bacteria or microbes? Apparently the only reason for believing in their efficiency and disbelieving in the tissues is that Pasteur has proved that *boiled* tissues are inert. (But these tissues are unboiled.)

How is disease communicated? In contagious diseases, so far as we know, the emanations of the patient, carried by various methods, are transmitted more or less directly from the sick to the well. It is not necessary here to speak of non-contagious or non-infectious diseases, such as gout, because no microbe has been displayed for them, although, for complete consistency with Pasteur's theory of fermentation, bacteria are as necessary for them as for anthrax disease or smallpox. These emanations consist of minute particles of diseased tissue, which float in the air or are in drinking-water, or adhere to articles of clothing, and they can be traced in their departure from the diseased, in their passage and in their arrival to the healthy. These particles of tissue have not been boiled, and why should we not believe in their efficiency for the communication of disease?

Particles of tissue have a very high potency of known character. Look at the pollen of the flower. Look at sperm-fluid coming in contact with an ovum. The pollen and the sperm are particles of tissue not entitled to be called organized, merely organic, separating from the parent organism, desquamating, dying, and on their way to death, but not dead; incapable of sustained separate existence,—and they are not lower organisms,

bacteria or microbes,—and behold their power! They possess the greatest power in nature. Can we not believe that a piece of tissue from a smallpox patient, if it has not been boiled, is gifted with at least a minimum of force? Again, if we take a rasping-file and grate off a fine dust of particles of skin over an ulcer that refuses to heal,—it is not necessary to cut out the thickness of the skin or draw blood. Dandruff will hardly suffice; but the mere surface epithelium, which will depart from the skin at the next hand-washing, will serve,—and behold the growth of skin on the ulcer from the planting of such small particles, which we look upon as nearly dead. Can we not suppose that the diseased skin separating from scarlet fever can communicate the disease to the healthy?

This is a show of power, of force of just the sort we are searching for in the communication of disease. Why should we even think for a moment about Pasteur's or anybody else's microbes? Apparently, the answer comes again, because Pasteur has shown that boiled organized tissues are stable, and will not originate a fermentation.

What evidence has Pasteur to offer for his microbe? His proof rests on the artificial production of disease in the lower animals by inoculation experiments. It will be necessary to examine his methods, for he starts much prejudiced in favor of this little vegetable organism, and against organized tissue; in fact, he is ready to hand over the whole of nature to the masterful influence of a microbe. Practically his method of work consists of the same means which he employs in fermentation experiments: merely that he substitutes for the sterilized fermenting fluid an animal into which is introduced the bacteria or microbes. He gets his microbes from the blood or tissues of a diseased animal, and puts a minute quantity of this blood, supposed to contain the microbes, into a sterilized culture-fluid in which, after many trials, the microbe of this disease has been found to grow the best. A portion of this culture, say a drop, is transferred to a second culture-fluid, and this in continuous series for an indefinite number. The final culture is called a pure culture. Just how many transferences or successive crops must be made to arrive at a culture which can be called *pure* neither Pasteur nor any one else has determined. Whether it is the sixth or the sixtieth flask which affords purity no one has shown, or whether the number of cultures differ in different microbes. Each experimenter has stopped his

cultures according to his own fancy, or sometimes when objectors stopped objecting, but as yet the criteria of purity remain uncertain. Some have called the culture pure when no other bacteria can be found in the culture-material save those considered characteristic of the disease.

Let us see what should be the criteria of purity. What is it we want to get rid of? Free from what must the material be to be considered pure? It can hardly be that all these successive cultures should be made merely to free the drop of blood of another organism than the one desired for use. In fact, if the theory which has arisen from all this elaborate work be true, but one organism can be present; if two organisms exist in the blood, there ought to be two diseases,—a disease for each organism. If it is freedom from the tissue that is sought by the culture method, then a lingering doubt exists that the organized tissue may have some force and some power to communicate disease. How is it supposed that the cultures rid themselves of the animal tissues? Pasteur has claimed, or others for him, in his experiments with liquid cultures, that the dilution of the blood by the successive transferences was all that was requisite to rid it of all traces of the original tissue. He has shown that commencing with a single drop of blood, and using each time a given quantity of culture-fluid, and transferring each time a single drop from one culture to another, in twelve successive cultures there is the same dilution of original blood-drop as if it had been placed in a bulk of culture-fluid as large as the earth we inhabit. Such a dilution is so immense, so beyond our conception, that it would seem entirely sufficient for the purpose. Pasteur has contented himself with dilutions less ample as affording the requisite purity. Is the idea intended to be conveyed in this mathematical calculation of the dilution a correct and fair one? I think not, because there are two important factors omitted from the mathematical expression, viz.: the question of the propagation of an influence by the morbid tissue and the time occupied by the process of culture. These two points are very important ones, and to them the attention of criticism has not been previously called that I am aware of. Pasteur, to convince us that his dilution is all-sufficient, speaks as though he had arranged in a row the twelve culture-flasks, into the first of which he places the drop of blood, shakes the flask to mix it thoroughly, and then takes

a drop of No. 2 and mixes it with No. 3, and so on with all to No. 12. This would be a fair dilution to the extent he calculates, and the mixture would be effected within twenty minutes. But he omits to speak of the time occupied. In reality No. 12 may not receive its drop of blood for a month or more, because of the pauses made for the culture to be effected in each successive flask. What happens in these pauses? Does anything else take place but the growth of the bacteria? Can anything else be supposed to be happening simultaneously? This culture process is undertaken to show that the original morbid tissue has no influence, and we are questioning whether this method furnishes conclusive proof of its want of power. If the tissue or blood has a morbid power of propagating disease, may it not communicate this power to the culture-fluid and propagate it through an endless number of flasks of fluid, if time be given for its influence to be exerted? If so, the dilution which Pasteur calculates as so enormous is misleading and delusive.

If Pasteur will make the actual dilution he describes, drop the blood into an ocean the size of the earth, and take a syringeful of the mixture for injecting an animal, he will find that not one of the microbes from the original drop will turn up in the syringeful of fluid. The whole question is in respect to the ability of morbid tissue as against microbes to propagate an influence and communicate disease, and the dilutions as performed by Pasteur, with pauses for this influence to be communicated to the culture-fluid, do not prove that this power or influence is eradicated or lessened by the dilution, no matter how great. Dilution of a drop into the ocean will eradicate this power, just as it causes Pasteur's microbe to disappear wholly and completely. Hence we are not certain that the culture method gets rid of the influence of the morbid tissue of the diseased person or animal. Some would say, What about this morbid tissue? We believe (or have believed) that disease is communicated by a *virus*, that so much and no more virus exists in a given bulk of tissue, and that Pasteur's culture method is sufficient to dilute or eradicate this chemical virus. It would be well to give up the use of this word virus. It does not mean anything, and nothing is known about it. It was invented by some poetical gentleman as a cloak for our ignorance. He knew nothing of the way disease was communicated or produced, and he com-

pared the cause to a poison and called it a virus. He never saw it, handled it, or knew anything of its nature: merely supposed it was a chemical compound. A virus can be diluted, while the morbid influence of tissue cannot be eradicated by culture. Let us not mention the word again. Disease is not like a poisoning; typhoid fever in no manner resembles a snake-bite, or morphine- or arsenic-poisoning. The two cannot be compared. Neither is disease like a fermentation. The word *symotic* is a mere figurative expression, which serves well in board of health schedules, but otherwise is misleading. It does not behoove the germ-theory advocates, who advance the vital action of bacteria in disease, to speak of ptomaines, the chemical poisons which these minute organisms produce, else they will find that the causes of disease must be regarded as a chemical substance,—something to be put into a bottle,—and not the vital effect of a lower organism.

Pasteur has made experiments in a number of maladies and has given us the results of his work. His first achievement was in relation to diseases of the silk-worm. The cause of the decline and death of the caterpillar was clearly pointed out, but that the condition which the author describes is to be compared with such general maladies as smallpox or typhoid fever as seen in the human race cannot be admitted. In one sense the silk-worm malady is not a disease: it is merely a mechanical destruction of the silk-worm by a parasitic fungus, which is enabled to grow by attaching itself to the surface of the worm when these silk-spinners are enfeebled by unsuitable hygienic conditions. When the worm is in healthy condition it immediately cleans itself of the parasite as it frees itself from any other foulness. A prisoner in a foul dungeon becomes infested with vermin or gnawed by rats, but the presence of the rats and vermin is not disease. The unshackled prisoner, with soap and water or a club, frees himself from their mechanical irritation.

Chicken-cholera was Pasteur's next work. It was in connection with this disease that his culture-methods were fully developed. For the first time he produced cultures of the microbes having a variable degree of virulence,—some killing the bird within a few hours, others producing death a few days or a week after inoculation. His chief work in this disease was the employment of preventive inoculations. These vaccinations against chicken-cholera have had claimed for them a great success, but the life of a chicken is so short

that it is very uncertain whether the effects of the vaccinations are permanent. It has been shown, however, that inoculations with septicæmic matters prevent chicken-cholera as efficiently as Pasteur's vaccine matter, so that it is entirely uncertain whether he ever found a genuine preventive. It is more than likely that Pasteur communicated to the chicken a mild form of septicæmia, which temporarily rendered the bird insusceptible to this disease, as we know that septicæmia renders a person rebellious to the infection of all contagious diseases. Again, it is not improbable, judging from Pasteur's reports, that this disease is not communicable by inoculation, since the symptoms produced in the inoculated bird are almost wholly unlike the conditions seen in chickens which acquired the disease by the natural method.

It is in connection with charbon or anthrax disease in animals and man that Pasteur acquired his greatest fame as an experimenter. In nearly all his observations of this malady he had, however, been anticipated by other observers. His fame arose from the proposal to eradicate the disease by the universal inoculation of every animal liable to the malady. It was the experiments with anthrax which seemed at the time to be producing a furor of belief in the germ agency of disease, and to-day one meets those who, while doubting the proof for other maladies, wonder that a doubt remains of the power of the anthrax bacillus, because, as the remark commonly goes, this lower organism is so easily found and is so abundant in the diseased animal. It seems that belief rises in proportion to the size of the microbe; with a microbe so large,—one we are so nearly able to handle, and one so easily to be seen with even a low-powered microscope,—many yield to the impression that such organisms have a potent effect.

Since these experiments have commanded such wide belief, it is especially necessary to examine the results to see if they prove precisely what they are used to prove.

An examination of the reports of experimenters on inoculations of animals with cultures of anthrax shows varying results, according to the degree of purity from morbid tissue in the culture of fluids. Commencing first by examining cases of disease acquired in the natural method, we find it is communicated from individual to individual, animal to man, by direct contact of the healthy with the diseased, or with the hides or hair taken from diseased animals. The morbid tissue is transferred from one to another, or the currier or wool-sorter has

portions of it lodge on his hands, perhaps in a slight scratch, or he may even inhale a portion. After a varying interval of time, called the period of incubation, a local sore appears at the place of inoculation. This incubation is the time required to pervert the healthy action of the tissues of the hand at the point of the scratch. Then follow symptoms, accompanied by fever, due to the absorption of the unhealthy products of inflammation, and with these symptoms are developed definite alterations of the lungs, spleen, liver and kidneys, as well as other organs. Death or recovery results as in other contagious or inoculable diseases. Pasteur says the period of incubation represents the time required for the growth of the anthrax bacillus and of its dissemination over the body by the circulation. He is not justified in ascribing the communication of the disease to the bacillus, because he has not proved that the morbid tissue that goes with it has not the power of communicating disease. He must remember that in natural contagion the carcass of the diseased animal has not been boiled to sterilization, and that the power of its tissue, greatly enhanced by the diseased state, still inheres.

Now, if we examine the results of artificial inoculations with material from No. 1 culture in the series of a dozen, we shall have very similar results. These will vary, however, with the animal used for inoculation purposes, as it is but natural to expect. They vary because in the artificial case the inoculation may be better, more effectually done; the matter used is fluid, ready to be syringed in easily, instead of a small particle of tissue, frozen and dried on its journey from Siberia, where the disease is prevalent. For these and other reasons easy to suggest, the inoculated animal has the disease communicated more thoroughly; it affects the internal organs more rapidly, and perhaps death may come sooner than in the natural case. If the culture stands a few days, giving the anthrax microbe time to increase in number in the culture-fluid before inoculation, the number of bacilli in the animal inoculated will be found greater than in a person or animal acquiring the disease naturally. But otherwise the symptoms, the changes in the organs, will be exactly the same in the natural and in the artificial disease.

This result does not prove, of course, that the disease-communicating power resides in the tissues, although the tissues were present in both the natural and the artificially pro-

duced disease. But let us look at the phenomena in an animal inoculated with the twelfth and later cultures. In such cultures it is evident the tissue has lost its power. Behold the result! The testimony of all observers seems to concur. The animal remains in apparent perfect health about forty-eight hours after the inoculation is made; then, often with great suddenness, crouches down, trembles, or, more commonly, has convulsions, which continue until death, which ensues rapidly. Are those the symptoms of anthrax disease? No, self-evidently not. Let us examine the post-mortem records of the dead animals. The reports read that all the organs of the body present a perfectly natural appearance, save that in many places, especially in the lungs, minute blood-spots, called ecchymoses, are seen. An examination with the microscope shows in the centre of these little spots a minute blood-vessel blocked with the anthrax bacilli. This blocking has caused the rupture of the blood-vessel, and the blood and the bacilli are poured out into the tissue. Hundreds—nay, thousands—of the blockages with hemorrhages are to be found, but especially numerous in the lungs. Are these the changes which are found characteristically in animals dead of anthrax disease acquired in the natural way? Again, no. What have the two results in common? Apparently only death. Can two diseases be considered for a single moment the same or in any way related which have neither the symptoms nor the alterations in the organs alike? Again, most emphatically, no. I said just now that the two conditions—inoculation with a No. 1 culture and with a No. 12 culture—have death only in common. They have also the bacilli in common, but the number of these organisms in the two conditions differs, the microbes being vastly more numerous and more concentrated in the vessels in the latter than in the former. They differ in another respect, also, viz., their cause or antecedent circumstances, and this fact is most important to remember. In No. 1 there was used for inoculation tissue and bacilli, and in No. 12 bacilli without the tissue. We have seen the difference in the result: one produces the disease, the latter produces death without the disease.

How can the result be accounted for from the bacillus inoculation with the No. 12 culture? Very readily, indeed. Into the animal we syringe a small quantity of fluid containing nothing save a richly-growing organism. During twenty-four or forty-eight hours the

microbes found in anthrax disease increase immensely in number; the few that were introduced have become millions on millions; and note especially that the animal inoculated shows no deviation in health, either generally, or locally at the point of inoculation. It eats and drinks and frolics, as it ought *not* to do if millions of anthrax bacilli can produce injury by their vital action. Suddenly the scene changes: out of perfect health panting and convulsion come. Can we find from the post-mortem examination anything to account for this sudden convulsion and shortness of breath? Pasteur says the sudden death is due to the anthrax microbe consuming by its vital action the oxygen of the blood, and the deprivation of oxygen causes the convulsion, and, as the process of absorption becomes complete, death. But what has the post-mortem examination shown us? It has shown blocks, called emboli, composed of bacilli, in half the minute vessels of the lungs. These blocks have stopped the circulation of the blood through the lungs, and consequently prevented the aeration of the blood. We know of death with similar symptoms produced by another condition of the blood-vessels of the lungs in which bacilli are not present. A woman after childbirth has one of the clots naturally formed in the uterine veins detached and carried by the blood-current, first to the heart and then to the lungs. When the clot blocks the vessels of the lungs, the woman, from a condition of perfect health, passes into convulsions, and with panting respiration dies very quickly. The symptoms and the post-mortem examination show precisely the same conditions in the animal inoculated with a pure culture of anthrax bacillus and the healthy woman in childbed, save in the former the occlusion of the blood-vessels is due to collections of anthrax bacilli which have lodged, and in the latter the blocks are composed of firm clots of blood. In these two instances death has no more been due to anthrax disease—or, in fact, to any other disease, as the word is ordinarily used—than in the case of a man on the scaffold with a rope around his neck. They are all instances of strangulation. The man's death we know all about, for we are familiar with ropes. The woman's death is more recondite, but entirely simple to those familiar with such conditions. In the inoculated animal we are not prepared to believe that anthrax disease has been communicated because we are shown a dead animal and the bacilli.

One word is demanded to explain that the

capabilities of the anthrax bacilli of killing in this manner are possessed by this microbe alone. The anthrax bacillus has a length greater than any other lower organism found in connection with internal diseases. Its length exceeds the diameter of a red blood-corpuscle; hence all goes well when they are carried endwise in the blood-current, like logs of timber carried down-stream; but in the fine capillaries, which can carry only a single red blood-corpuscle, let an anthrax bacillus become turned crosswise, and immediately a jam, as of logs in a river, takes place, the bacilli become piled up, and the blood-vessel ruptures and causes a minute hemorrhage. On account of its superior length the anthrax microbe alone can furnish such an incident and produce, when in sufficient numbers, this sudden death. Hence the brilliancy of Pasteur's results,—sure death to the inoculated animal,—together with the readiness of displaying the microbe, has gained him many believers.

In respect to his preventive inoculation of anthrax disease, we cannot stop to discuss his juggling to prepare the vaccine matter, which used to be offered for sale by the kilogramme at Boutroux's shop, Rue Vanquellan, 18, Paris; it must suffice to say that it is an easy deception of observation readily explained. Whatever else is done in preparing the vaccine material by cultures, it is evident from Pasteur's own claims that the virtues have so far departed that the disease itself is not communicated; it is also true, if his own theory is to be trusted, that a rotting fluid is prepared,—using the word rot in the broad sense, decomposed in some manner by the growth of a microbe,—and this rotting fluid is used for the preventive inoculation. The expected conditions follow; a mild form of septicæmia in the cattle is caused, rendering the animals "refractory" to the influence of the contagion of anthrax. Pasteur will find his animals equally protected against the smallpox or scarlet fever or any other contagious malady to which they may be liable. Man is not likely to contract smallpox or other contagious diseases while suffering from septicæmia. Septicæmia is a more sure protection from contagion than the contagious diseases are against each other. Measles and scarlet fever, and other eruptive diseases, may follow each other in rapid succession, or may coexist even, but septicæmia while it exists, and for long after, bars out other maladies of a contagious sort. But Pasteur does not seem to recognize these facts any more

clearly than he comprehends that his preventive inoculation is a septicæmic condition. Why should we expect him to? He is not a physician, much less a pathologist. Why is it not more than likely that he should be self-deceived by his experiments? Further, the inoculations are protective for only a few months. When the septicæmic condition of the animals passes over, they are liable to the disease as markedly as before, and so the whole matter has been given up.

The next group of diseases, for which proof has been offered of their causation by microbes, is the surgical infective diseases. This work finds a prominent representative—and at every step other observers have rendered contributions of an important character—in Dr. Koch, of Berlin, who has since made us acquainted with his studies in tubercular disease, and more recently cholera. With these diseases, which include septicæmia, pyæmia, and erysipelas, it is difficult to discover on what grounds the proof of their bacterial source is founded. It is not contended that the maladies are specific contagious diseases in the sense that smallpox and scarlet fever are. One case does not presuppose an antecedent attack of disease in another person, although such may be. The cases originate *de novo*, and do not have to be transmitted through a continuous series. Their nature is infective, and they arise principally from or through neglect or uncleanly conditions of wounds, although they may acknowledge another source.

The variable or *de novo* origin of these diseases has been taken advantage of by observers in studying their cause and nature. The experiments are begun by injecting into the tissues of animals putrid meat infusions. From animals which die of the putrefactive infective disease portions of the fluids or tissue are taken and inoculated into another series of animals, and so on, with the result, which is not at all surprising, that the virulence of the infectious matter is increased, and death follows the inoculation with greater and greater rapidity.

It is at once very striking that this method of study differs *in toto* from that in other diseases. In all the others the aim has been to arrive at a pure culture of the germs or microbes. Why is this difference? No explanation has been offered, and yet it would seem we are equally in these diseases entitled to see, to study the action of the pure culture of organisms, apart from the effects of putrid tissue, as in the other maladies. Nay,

is it not far more important, since infective diseases are not specific, but can be generated from perfectly indifferent substances, such as putrid meat? Hitherto we have believed that wound infection was due to the absorption of the putrid discharges derived from the rapid breaking down of tissues; and now, as the result of these experiments, using for infection putrid meat,—and the organisms in it,—we are invited to believe that the efficient cause—the *causa causans*—is the organism alone, and that putrid tissue has nothing to do with the result.

I do not see how it is possible to attain to a pure, that is, a clean culture of these organisms. If the function of the microbe is putrefactive, the hundredth transference in the ninety-ninth culture-flask results in putrefaction of the culture-fluid, just as surely as this process is going on in the original putrid meat infusion. Injection of putrid culture-fluid teaches us no more than putrid meat infusion. In both cases two things are injected, a putrid tissue and certain organisms; and the question still faces us, Which of the two causes the disease?

The argument which the Germ Theorists have been pleased to put forward runs as follows,—the argument holds for this group of diseases as well as for the others: "I discover the microbe, I cultivate it, I inoculate it, and I reproduce the disease" (*Treat. Soc. de Chirurgie de Par.*, 21 Oct., 1885). One portion of this argument without all the others does not lead us to any conclusion, and the mere finding of an organism in the dead or living tissues of disease furnishes not an atom of proof; nay, not even a probability or a possibility that it has anything whatsoever to do with the production of disease. A great deal has been written about organisms being "constantly present," or being "characteristic" of a disease, and, in fact, quite too much has been said. So very much depends on how one is looking for organisms. Has the search always been made in the same manner? Have all sorts of methods been used to discover all varieties of organisms? Or has the organism been called "characteristic" to meet the observer's wishes? Reviewing the history of organism in disease, we shall find that three other organisms have been pointed out in tubercular disease besides the present reigning one, Koch's tubercle bacillus. Pasteur has presented to the French Academy three different microbes as the genuine cause of hydrophobia. These several organisms have been in turn

abandoned in favor of the newly-discovered one, and we seem to be in daily dread of a new announcement, a new introduction which may upturn our settled convictions. The abandoned organisms do not disappear; they can be found by looking for them. The discovery of an organism does not present anything "characteristic" for the disease, in fact it gives us nothing but the opinions of some one or more observers, and we may be only on the brink of the invention of a new microscope to see a new bacillus hitherto invisible but equally constant with the present one.

The cultivation of the organisms—the second factor of the argument—we have seen; we know the process, and know what it amounts to; we have seen that it is carried on to produce purity; we have seen the uncertain standard of purity. The method may furnish us with microbes of one variety, but it never gives us purity; it never gives us singleness. We always end with using two things in inoculations, the microbe and the culture-fluid, and we shall never know to the end which one of the two produces the result. If it were possible to impale a microbe on a needle, to wash it under the faucet and rub it dry with a clean towel before inoculation, we should then know what the microbe was able to do when growing in our bodies. By this means we should see if its growth were able to cause the symptoms and the post-mortem appearances characteristic of the disease. We should have placed before us the genuine effects of the growth of the low organisms, and we should have purity, genuine purity, in our culture. As it is now, we know no more than if we took a retort with a piece of copper in it and poured on it a mixture of an acid and alkali and said, Behold how the acid affects the copper! To-day we are doing a parallel piece of work with the inoculations. We inoculate with microbes and the culture-fluid in mixture, and put the whole result down to the credit of the microbe.

Again, in judging of inoculations, a result which satisfies one observer that he has reproduced the disease does not convince others. Many conclude, when they succeed in killing the inoculated animal, that the death shows a sufficiently evident result; this is especially conspicuous in Pasteur's works; the death seems all-sufficient. Many experimenters have employed in their inoculation animals which are not susceptible of the disease under any circumstances. How can any faith be placed in their results?

The question of tubercular diseases is a most interesting and important one. Koch, of Berlin, has been the chief to formulate the germ-teachings—in fact, the discoverer of the bacillus—of this group of diseases, but a whole host of experimenters have repeated his observations. It seems almost impossible to point out, in less space than a volume, the fallacies or lack of proof of these observations, and quite hopeless to make all the objections to them clear in a few paragraphs.

In 1865, when Villemin showed by experiments that it was possible to cause tubercles to appear in animals inoculated with certain degenerating organic matters, the general opinion held at that time was that tubercular diseases were occasioned by these same materials originating from a variety of conditions within the body of a person or animal attacked by tubercle. The passing strange part of Villemin's work was that the inoculation of foreign matter served the same purpose in causing the disease as the matters occurring naturally within the body. Villemin's observations were repeated by other experimenters in a great variety of ways, and were in the main confirmed. But another important fact was shown by the experiments of others which Villemin did not discover. Villemin claimed that only tubercular matters could communicate tubercular disease to the inoculated, and that therefore tubercle was a specific disease, since like produced like. But his imitators showed that unlike, dissimilar, and even indifferent organic matters were capable of producing tubercular disease in the inoculated animal. A lump of cheese was found by many experimenters to be just as effective in producing tubercular disease as a piece of tubercular lung when introduced beneath the skin of a rabbit. In other words, any degenerating inflammatory product was liable to produce tuberculosis, and therefore the disease is not truly a specific malady, and although like did produce like, unlike matters could also produce it. Here the matter rested. The question at this time did not stand in relation with the germ theory of disease, and very rash would have been considered the theory to announce that consumption was a contagious malady because it could be inoculated.

Before the introduction of Koch's bacillus of tuberculosis there had been, as has already been mentioned, three other organisms observed, which were handed around Europe for inspection and vaunted as the genuine cause of tubercle, but, because of the minute care

which Koch had observed in his experiments, his bacillus was at once accepted as the only genuine.

And now, if this bacillus was to be accepted as the cause, it became necessary for the eminent pathologists who had found cheese efficient for the production of tubercle to explain the discrepancy. A few, Cohnheim among the number, suggested that the cow furnishing the milk for the cheese was probably tuberculous. No one ever showed the presence of bacilli in cheese; in fact, cheese manufactured in the ordinary way could not have bacilli in it: they would be destroyed; nevertheless the argument was made with seriousness. Others concluded that the results from cheese were due to bacilli, accidentally floating in the air or adhering to the knives and forceps, inoculated along with the cheese. And to remove this accidental contamination of the cheese they repeated the experiments with all due precaution. What were these precautions and how did they affect the result? They were the usual antiseptic surgical means, consisting of the use of carbolic acid spray and solution in which the hands and instruments and the wound are washed (I don't know whether the cheese was soaked in it or not, but it ought to have been, according to their theory, if it was not). Now, having inoculated the rabbit with a great deal of carbolic acid and cheese, they came to the conclusion that cheese was inert: that it never did or could produce tubercle. What a sorry piece of evidence to offer! Suppose Koch, when inoculating rabbits with pure culture of tubercle bacilli, was to do it in an atmosphere drenched with carbolic spray, his hand and instruments dripping with carbolic solution and the wound of inoculation flooded with it, would he expect his bacilli to live through such a flood and cause tuberculosis in the animal? He never allows carbolic acid to come near the bacilli, and if he did he would have negative results. No, it is the same old fallacious method of dealing with the question. Start out with the notion that lower organisms are the only genuine cause, and living tissue (or cheese unboiled) cannot possibly have any effect, and an endless number of experiments can be arrayed to favor the view. Do everything to favor the microbe, and do everything to render the tissue inert,—boil it, flood it with carbolic acid or corrosive sublimate, give tissue no chance at all,—and you will arrive at the same conclusion. Use cheese or other degenerating organic matter without bacilli and no carbolic solution, and you will have a different

result. Do not kill the bacillus (and the cheese along with it) before you catch it, or else try a boiled bacillus as well as a boiled cheese, and see where you will come out, since either both should be boiled or neither.

It is therefore yet possible that some may find a way to show the efficiency of cheese or other organic matter free from bacilli,—and there is plenty of such matter to be had,—and then the bacillus of Koch will lose its significance and importance. But let us consider the fallacy lurking in Koch's experiments. This gentleman has produced the pure culture of the bacillus in the usual manner by successive generations. The culture medium he has found necessary for the growth of the organism is a preparation of gelatinized blood-serum,—a solid medium instead of the fluid. These cultures are called pure, as in other cases, because no other organism is growing in them. But, as in other cases, the mass actually employed for inoculation consists in a considerable proportion of the gelatin, with the bacillus growing in it,—two things. The blood-serum, an organic matter previously sterilized into inertness by boiling, is passing, through the agency of the growing organism, into a state of decomposition, degeneration, rotting,—call it what you will,—and is no longer sterile, but resembles the state of cheese or other organic matters which are capable of producing tubercle. That Koch's gelatin contains bacilli is a matter of indifference. That the bacilli are mixed up with rotting gelatin is a matter of great difference, since we are thereby prevented from knowing what bacilli alone can do, unaided by a material in itself capable of producing tubercle. The reply is made to this criticism by those who do the experiments that "control" inoculations show the blood serum or gelatin to be wholly innocuous. They take blood-serum from the tube in which the bacilli grew, merely half an inch away from the growing organism. No one contends that blood-serum is noxious when sterilized, or that the serum within the tube, except as it comes within the influence of the growing organism, becomes unsterilized no one affirms. But that the serum or gelatin on which and in which the tubercle bacillus grows is no longer sterilized every one must admit, and it is this actively changing serum or gelatin which is used for inoculation. To say that blood-serum or gelatin sterilized, even if taken from the same tube with the growing organism, is harmless does not tell us anything useful,—for with the microscope,

or even with the naked eye, it is plainly evident the serum is not in the same state as that in contact with the growing organism, and which makes up the bulk of the material used for inoculation. It is probable, on the contrary, that serum or gelatin undergoing such rapid degenerating changes, induced by the growing organism on its surface, is more powerful to cause tubercular disease than other decomposing organic matters occurring either within or without our bodies; as it is thus rendered specially potent, less bulk of it serves to produce tubercular disease in the inoculated animal, irrespective of the presence or absence of the bacilli. The tubercle bacillus of Koch is but an epiphenomenon of the disease. What is wanted for use in inoculations is the bacillus alone, freed from everything else. If, again, Koch will impale a bacillus on a needle, wash it clean, and introduce it, then we shall know what it is able to do. We object most strongly to the mixture of rotten gelatin and bacilli, for the rotten organic matter we have hitherto believed to be the cause of tuberculosis.

The claims which have been put forward for the germ origin of cholera are very uncertain. Two great government commissioners have investigated and reported, and still the question is more than uncertain and unsatisfactory, and it must be very unsatisfactory even to the commissioners themselves. In fact, so little has been shown conclusively that there is scarcely anything on which to base a criticism. A majority, perhaps, of those who would admit the claim of a germ origin, were it once established for other diseases, would deny its possibility for cholera, such is the dissimilar character of the malady.

Finally come Pasteur's studies in hydrophobia. This illustrious man has made three attempts at the malady. The first essay was in 1880-81. It was a microbe taken from the saliva of a child dying of rabies after a bite from a mad dog. This was a very evident mistake, which, however, the French Academy applauded until it became quite generally known that inoculations with this microbe merely produced septicæmia. A few years later, in another communication to the Academy at Paris, another set of conclusions was presented, to be again received with favor, only to be abandoned, without disproof of any sort, for a newer theory of the distinguished savant. This last theory—the procedure under it has been officially published in the *Herald*—differs *in toto celo* from the

previous ones, and is in fact a virtual actual abandonment of the germ theory of disease. All of Pasteur's former work was to establish the fact that a microbe was the sole agent in producing disease, and, in fact, for effecting every other change in the universe.

His latest work in hydrophobia discards the micro-organism and substitutes the diseased tissue of the rabid animal. Pure cultures are thrown to the winds, and preserved spinal cords and brains, without a word of microbes, which cannot be made to appear effectively, are brought forward to do the work.

What is the method of procedure? The spinal marrow of a rabid dog is mingled in definite proportions with pure veal-broth, and this is injected into the brains of a rabbit. This experiment, Pasteur assures us, communicates hydrophobia to the rabbit. By successive transmissions from one rabbit to another the virus becomes modified, and thus fitted for the inoculation of persons in order to prevent the development of hydrophobia in those who have been bitten. In inoculating with the attenuated virus those threatened with the disease, the primary injection with the mixture of spinal cord and veal-broth is made with the weakest mixture and continued for ten or eleven successive days with a graded mixture becoming progressively more virulent. The final injection is said to be performed with a rabic virus which will produce hydrophobia in an animal or in a person unprotected by the previous injections in six days, a period shorter by one-half than the virus taken directly from a rabid animal's spinal cord would require to produce the malady, or in a very much shorter period than such an animal's bite would take to turn one mad.

In this description—and the details of the method are all kept secret—not a word occurs about the microbe; and in fact it is certain, since the spinal cord itself is employed, that the effects cannot be due to microbes alone, even supposing them to be present in the tissue. With these experiments before us one is almost tempted to believe in this item of Pasteur's work. He makes use of diseased tissue, which one could rationally suppose was able to communicate disease. That the diseased conditions reside in the nervous tissue alone we have not a single item of proof, and there is not a particle of reason to believe that this is true. Would not a piece of the tongue or a toe of the dog serve equally well? One can hardly be brought to believe that a general disease like hydrophobia is localized

in one portion of the body. Let us be rational for once.

But apart from the method of preventive inoculations of hydrophobia which Pasteur has invented, and of which we as yet know scarcely anything, the point to be insisted on in connection with our present discussion is the complete abandonment by him of the germ theory of disease. Without a microbe to look to where are we, and what becomes of that theory? If we are no longer even trying to, deal with pure cultures of organisms, but purposely include diseased tissue in our inoculation material, the theory vanishes, and we come back to the old notions, putting our faith again, as is rational and in accordance with endless testimony, in the potency of diseased tissue for the communication of disease, and in nothing else.

FLUID EXTRACT OF CORN SILK (STIGMATA MAIDIS) IN THE PRIMARY OR ACUTE STAGE OF GONORRHOEA.

BY E. STUVER, M.Sc., M.D., RAWLINS, WYO. TERR.

EVER since engaging in the practice of medicine, over six years ago, I have been a constant reader of from four to six of the best medical journals published in the United States, and always having a large number of cases of gonorrhœa to treat, have eagerly watched for every advance made in the treatment of this—in many cases—obstinate disease; but while almost innumerable remedies have been suggested, and their merits discussed pro and con, I have never seen any reference to corn silk, which, in my hands, has given such satisfactory results that I have decided to call the attention of physicians to the remedy, and ask them, after having carefully tested its merits, to report the results obtained from its use. Right here I want to insist on the necessity of using a perfectly fresh and reliable preparation of the drug, as there is the greatest difference between the physical qualities and therapeutic action of the various products put on the market, even by our most reliable manufacturing pharmacists.

I began using corn silk in irritating and painful affections of the kidneys and bladder, attended by dysuria, about five years ago, and in the *Medical News* of October 6, 1883, published an article on its "Anæsthetic and Diuretic Effects." In this article special at-

tention was called to the beneficent influence it exerts over the irritable condition, attended by frequent micturition, so often encountered in pregnancy.

Encouraged by the results obtained in the above-mentioned class of cases, I decided to test its merits in allaying the irritation and pain of the acute stage of gonorrhœa. A case soon presented itself, and the following condition noted:

C. H., laborer; contracted gonorrhœa a short time ago; discharge made its appearance yesterday; inflammatory action high, and pain on micturition severe. After giving the ordinary directions as to the regulation of diet and the alvine evacuations, abstention from spirits, etc., I gave the following, viz.:

R Potassii acetatis, ℥iii;
Fl. ext. stigmatæ maidis,
Aquæ destillatæ, aa ad q.s. f. ℥iv. M.
Sig.—℥ii in water every two hours.

The following day he reported himself as greatly relieved, and under this treatment not only did the irritation and pain subside in three days, but the discharge almost entirely disappeared, and he felt so well that, against my positive instructions, he resumed his work (digging a ditch), and had a recurrence of the symptoms, which did not yield as readily to treatment as in the first instance, but were controlled, so that the entire attack did not last more than two weeks. A large number of cases might be cited, but, as they have histories very similar to the one above related, I refrain from giving them. I do not want to be understood as claiming specific powers for corn silk in the acute stage of gonorrhœa, but merely desire to call attention to it as a remedy of positive value in properly selected cases.

KAWA IN GONORRHOEA.

DR. SANNE recommends in the *Bulletin Général de Thérapeutique*, March 15, 1886, the kawa-plant for the treatment of acute affections of the urinary passages, especially of gonorrhœa. He gives four to ten pills of the extract daily, each pill containing $\frac{1}{4}$ grain of the extract.

The employment of kawa for these affections does not appear, however, to be of a recent date, for Gobley and O'Rocke advocated the use of this drug as early as 1860 in the same French journal.

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Leading Articles.

ANTI-PERIODIC EFFECTS OF QUININE.

SCIENTIFIC therapeutics is something like a family flour-barrel: everybody goes to it and everybody gives it a kick. Very frequently, however, the cause of the grumbling lies not with the investigator of physiological therapeutics so much as with the pathologist. In many places practical therapeutics outrun pathology, and the results which we obtain at the bedside by the use of remedies cannot be explained, because the pathologist is unable to explain the rationale of the disease.

The antiperiodic property of quinine has long been an absolute mystery, which has baffled every attempt of the scientific therapist to solve. It looks now as though the problem would be an easy one when the pathologist has done his work. The recent studies made at the Philadelphia Hospital by Professor Osler strongly strengthen the probability that the cause of intermittent fever is an infusorium in the blood, as first noticed by Thomasi Crudelli. Professor Osler has examined some forty odd cases, and, with scarcely an exception, has found the creature in one of its three forms, either as a flagellate

living body, moving about the red blood-corpuscles and scattering them hither and thither, or a quite crescentic-shaped body, or an amœboid form living in the red blood-corpuscles, and apparently destroying them.

In one or two cases in which the diagnosis founded upon the symptoms was very doubtful, Dr. Osler was able to decide the nature of the case by finding these creatures in the blood of the patient. In all of such cases quinine produced rapid amelioration. Quinine acts as a powerful toxic agent upon many of the lower forms of life, and the theory must at once suggest itself to every mind that it cures intermittents by destroying the germs to which the fever is due. We do not know of any direct experiments upon these infusoria with quinine, but certainly such studies are urgently demanded. Professor Osler has found that the cure of the intermittent by quinine is followed by the disappearance from the blood of the infusoria; such disappearance not, however, being rapid but gradual. No one has yet succeeded in growing the infusoria outside of the human body.

Although the suggestions which have been put forth in this note still belong in the category of speculation, there is enough foundation of ascertained fact to stimulate very greatly the study of the matter by those who are situated in highly malarial districts.

BROMIDE OF ETHYL.

IN a recent number of *Science* there is recorded in detail a death which recently occurred in Brooklyn or New York from the use of bromide of ethyl by a dentist. The rapidity of action, and the general comfortableness of the bromide as an anæsthetic, leads every now and then to its being recommended by some one, and to its still being used to some extent.

When it was first actively proposed as an anæsthetic it was carefully investigated by Dr. H. C. Wood, who, as the result of his experimentations on the lower animals, arrived at the conclusions that it acts like chloroform on the heart, and that it would be a more dangerous anæsthetic than chloroform. Within a very few days after the publication of Dr. Wood's paper a case was reported in which death from cardiac failure was averted with the greatest difficulty, and only a few weeks later a fatal anæsthesia was put on record. Since that time there have

been several deaths from the use of bromide of ethyl. Those, too, in spite of the general abandonment of it.

There is probably no anæsthetic which has ever been used to any extent that has as high a mortality rate as has the bromide of ethyl. The advantages which it possesses over chloroform are so slight as to be of no importance. We do not think the habitual use of chloroform as an anæsthetic is justifiable, but certainly it is much better to employ it than to venture the dangers of the bromide.

PRACTITIONERS AND SCIENTISTS.

IN a brilliant review of the recent book of Mr. Whipple's, which contains the lives of Choate and Agassiz, we were much struck by the remark that the work of the lawyer is necessarily fugitive and without permanent record of fame, because he simply labors to convert his intellectual abilities into money. His work is temporary and is rewarded immediately. He builds no more for the future than does the man of business or the man of pleasure.

It is affirmed of Agassiz that he once said that he had no time to make money. This was because he was building for the good of mankind and for future generations. The best work of the world is never paid for. Newton, when he labored on his immortal astronomical papers; Kepler, when he discovered the laws which control the universe, never dreamt of pecuniary reward. The man of medicine stands midway between the lawyer on the one hand and the devotee of abstract science on the other. He partly works for money and he partly labors for the universal good, and just as he works for the one or for the other so is his reward. The fashionable practitioner, the great specialist, who annually receives his many thousands of dollars, is the man of the present. Often, however, his present success is founded upon his past labors for science, and thus it is that very few original great medical works, and very few great discoveries, very few profound researches spring from men who are past middle age. The scientific work of Charcot was done in the days of his earlier manhood. The labor of his later years goes to maintain a gorgeous palace and a retinue of servants.

American scientific medicine especially fails in its highest development on account of the ease with which men great in medical science slip over into the ranks of the money-makers.

The naturalist who for ten or fifteen years has done good work finds as he approaches forty, the age at which avarice begins to assert itself, and the demands of an increasing family grow clamorous, no new avenues open to receive him by means of which he can rapidly make money. But the American physiologist, or man great in medical science, at forty begins to see avenues leading down into new vistas of financial prosperity opening themselves in pleasant sunshine about him, and so forsaking the nobler labor of building for the general good and for the future, fattens himself in the fields of popular patronage. Thus it is that whilst American naturalists stand foremost in number as well as in greatness, American medical scientists, whose names deserve to be put alongside of those of the great men of Europe, are so pitifully few.

CERTIFICATES TO PROPRIETARY MEDICINES.

WE print in another column a letter from one of our subscribers concerning the giving of certificates by physicians recommending proprietary medicines. We sympathize with the views expressed in that letter thoroughly. There is no simple thing connected with the medical profession which conveys an impression of besotted weakness so strong as that produced by the certificates which are to be seen signed by men of prominence.

We are very sure that the physicians who sign these certificates are never paid for the use of their names; if they did receive an honorarium commensurate with the service which they render the proprietor of the medicine, we would have a less opinion of their morals, but a much higher one of their common sense, self-control, and business tact. The smooth-tongued, wily commercial traveler usually holds the doctor in the hollow of his hand, and moulds him as plastic clay. After his return to his rooms in the night, he enjoys most heartily recounting his triumphs of the day with his fellows.

It is very rare for a doctor to thoughtfully and carefully study the effects of one of these proprietary medicines. He gives them; the patient gets better, and he signs the certificate, receiving as an honorarium a bottle of the wretched stuff, which he in turn bestows on some poor patient. Probably the other medicines and hygienic treatment which

accompanied his gift of the sample were responsible for the good achieved, but the doctor fails to recognize this. One thing is positive, that these proprietary medicines contain nothing which may not be equally well represented in office prescriptions, and are charged for at a rate which is exorbitant. The advertising agent and commercial traveller, the medical and the lay journal management, all have to be paid out of the profits of the proprietary medicine, and the seller of this medicine deems himself a shamefully abused creature if he does not make two or three hundred per cent. clear of all his expenses.

In no section of medicine has this abuse of certificates been greater than in regard to disinfectants. There is probably no disinfectant proprietary solution prepared or sold and placed upon the market which in any way represents the price at which it is sold. Most of these proprietary disinfectants are almost inert, and the most worthless of them are those to whose certificates are appended the names of the greatest of our physicians. A surgeon uses listerine, or some other expensive preparation, and takes all the well-known precautions and care which form a portion of modern antiseptic surgery; the results are good, and forthwith he sounds the praises of the proprietary disinfectant he has employed. Whereas if he had ordered an extemporaneous mixture, the results probably would have been better; or if he had substituted a little carbolized oil, or even alcohol and water, for the disinfectant, the results would have been as good. If the surgeon would make a scientific test of the antiseptic or antibacterial properties of the proprietary disinfectant, he would probably never himself use it, much less sign a certificate.

Exactly where this thing is going to end it is somewhat difficult to see. Like many other evils, it contains within itself the germ of its own destruction. It has already made the medical profession a laughing-stock among those who use the doctors to pull chestnuts out of the fire. It is, perhaps, not too much to hope that in a few years the people will generally recognize the folly of the profession, and the true worthlessness of these medical certificates will be so generally known as to deprive them of their force.

Meanwhile, we would advise those of our readers who desire to keep their own garments unspotted, and who dislike being made a tool of designing men, to refuse absolutely to sign any certificate of any proprietary medicine. Such signature does its writer no

possible good in any way; it does the community no good at all. The only useful purpose it can serve is to enrich a man who is only a shade above the ordinary patent-nos-trum vender. It may afflict and torment an already long- and much-suffering community. Cannot the average doctor get enough of manhood about him to say No even to a commercial traveller or bland sample-distributor?

YELLOWSTONE PARK.

OUR readers will remember that in our last issue we corrected some inaccuracies in our previous statements in regard to the chemical work of the United States Geological Survey. At that time we had not been able to get exact information; but through the courtesy of Dr. A. C. Peale, of the Survey, we are now able to make what the French call an "inspired statement."

Dr. F. A. Gooch spent the field season of 1884 in the Yellowstone National Park as a member of Mr. Arnold Hague's Yellowstone Division of the United States Geological Survey. Waters were collected from all the more important geysers, hot springs, and rivers of the Park, and were carefully selected with reference not only to their geological significance but also to the interest taken in them by the general public. Many of those forwarded to Washington were concentrated solutions, obtained by the evaporation of large quantities of the natural waters at the place where collected. From the end of the field season of 1884 until Dr. Gooch's appointment to the chair of Chemistry at Yale College, in July, 1885, work was carried on by him at the laboratory of the Survey in Washington, with the assistance of Mr. J. E. Whitfield, and a series of forty analyses has been completed, the results of which will be of great interest to geologists, chemists, physicians, and all interested in thermal waters. Analyses have been made of waters from the following geysers, viz.:

In the *Upper Basin*,—Splendid, Grotto, Beehive, Grand, Geauter's, and Old Faithful.

In the *Lower Basin*,—Fountain and Great Fountain.

In the *Norris Basin*,—Pearl and Fearless.

In the *Midway Basin*,—Excelsior.

Waters from the following springs are also included in the list, viz.: Artemesia, Bench, Hillside, Hygeia, Coral, Schamkessel, Cleopatra, Orange, Terrace, Soda Butte, Chrome, and Ink-Pot. The waters are of remarkable

complexity, and the results of the analyses are important, both from a practical and scientific point of view.

The fact that all the waters of the region contain arsenic in quite appreciable quantity is important from a medical stand-point.

PROFESSIONAL SECRECY.

THE question of professional secrecy has recently cropped up at Washington in rather a novel form.

Dr. A. Y. P. Garnett recently gave a certificate of disability to an employé of the Pension Bureau. For some reason the head of the Department demanded from Dr. Garnett a specific statement as to the ailment of the patient, which Dr. Garnett refused to give. An appeal was then taken to Secretary Lamar, who sustained the doctor. It is very curious to note the different legislation which exists in the various States in regard to this matter. In France, and we believe on the Continent generally, the secrets of the consulting-room are held by law to be inviolable. In New York the doctor cannot be forced by the Court to reveal any of the statements of his patients to him, although, if the consent of the patient is given in the court-room, the doctor is capable of acting as a witness. In this State—Pennsylvania—the law is silent upon the subject, leaving the doctor subject to the common statutes.

We suppose the time will come when in this and other States the professional secrecy will be protected.

Reports on Therapeutic Progress.

ON THE ANTAGONISM OF MORPHINE AND ATROPINE FROM A CLINICAL AND EXPERIMENTAL POINT OF VIEW.

LENHARTZ, of Leipzig, ventilated the question of the antagonism of atropine and morphine before the recent German Congress. In three cases observed by the speaker no such antagonism was evinced. The numerous cases of recovery after large and even enormous doses of morphine, without the aid of atropine, as well as the high doses of atropine usually thought indicated, speak against the antagonistic theory. Johnston (Shanghai) is a warm advocate of the doctrine. The explanation of the failures of the atropine exhibition after poisoning with

morphine is, in Lenhartz's opinion, far from being satisfactory. Exhaustion and convulsions cannot be accepted as the causes of death, and the latter are much more frequent in his opinion (22.7 per cent.) than usually believed. Only in one-third of all cases does death take place here. It is, besides, singular that even minimal doses, such as $\frac{1}{4}$ to 1 mg., are supposed to have wrought a cure. From the very extreme limits of the dosation of the antidote, we can justly deduce the uncertainty of its indication. Johnston advises the exhibition of atropine in every grave case, even in presence of a weak, irregular pulse. Wood thinks the condition of the respiration ought to determine whether or not atropine should be given, while Binz positively condemns its exhibition in a small, weak pulse. Of one hundred and thirty-two cases of poisoning with morphine observed by Lenhartz, he treated fifty-nine with atropine, and lost twenty-eight per cent., while in the seventy-three cases treated on a different plan only fifteen per cent. died. He believes that atropine is directly injurious in morphine-poisoning. Binz recommended atropine solely on the ground of experimental researches; but it must be remembered that Binz produced merely sleep and never a grave intoxication in the animals experimented upon. Consequently Binz's results are not transferable to the field of therapeutics. Binz gave only 0.029 grm. to 0.05 grm. morphine per kilo.; Lenhartz saw recovery after 0.13 grm. to 0.28 grm. morphine. Animals in which a deeper intoxication had been induced did not perish through reduction of arterial pressure or the deteriorated respiration, but through the exhaustion of the nervous centres, resulting from the numerous convulsive and tetanic paroxysms. In eight instances the speaker exhibited atropine without producing the slightest effect; the animals died just as soon as before. Hence he opposes the practice of treating cases of morphine-poisoning with atropine.

The subject is sufficiently interesting to give space also to the discussion subsequent to the reading of Lenhartz's paper.

Freimuth (Danzig) reported a case of a simultaneous intoxication with morphine and atropine which recovered, and feels, therefore, justified in believing in the existence of a physiological antagonism between morphine and atropine.

L. Lewin (Berlin) defends the experiments of Binz. Even those opposed to the doctrine of antagonism, he said, admit the favorable

influence of atropine upon the damaged respiration. The clinical cases reported upon by Lenhartz have no value in Lewin's estimation. We cannot expect infallible recovery after the exhibition of an antidote, on account of the great diversity of the conditions of an intoxication.

Lenhartz concludes as follows :

1. Atropine appears to raise the arterial pressure in cases of poisoning with morphine only in some cases and only for a short time.
2. Binz recommends small doses of atropine.
3. An effective antidote should not only improve the condition of the patient but also remove the cause of death ; hence atropine is no reliable antidote to morphine.
4. Washing out of the stomach in cases of acute intoxication with morphine should be the first and principal remedial resort.

SULPHATE OF SPARTEINE.

HANS VOIGT, working in Nothnagel's clinic, has come to the following conclusions respecting the therapeutical action of sulphate of sparteine. In small doses the salt increases the efficiency of the cardiac contractions and raises the arterial pressure. The number of heart-beats is always increased. These effects are observed within an hour of the administration of the drug, and continue for twenty-four hours. The author recommends the suspension of the administration of the drug for some days, but it may be given for a week without risk. The remedy does not always regulate the rhythm of the heart-beats. Its action on the respiration is variable. Diuresis appears to take place in proportion to the improvement of the cardiac action. A beneficial sedative action is often observed. Headache, vertigo, malaise, and other objectionable symptoms were but rarely met with as the result of the administration of small doses. The dose employed has been from 1 to 4 milligrammes ($\frac{1}{1000}$ to $\frac{4}{1000}$ gr.). It will be remembered that in Sée's hands much larger doses, 5 to 20 centigrammes ($\frac{1}{20}$ to 3 gr.), were tolerated without cumulative or other objectionable effects.—*Lancet*, September 4, 1886.

HYDRASTIS CANADENSIS.

DR. WOLTERING, of Münster, confirms, in a paper published in the *Allgemeine Medicinische Central-Zeitung*, No. 47, 1886, the favorable results obtained with *hydrastis canadensis* by Fellner and other therapeutists of note.

The styptic virtues of the drug, especially in uterine fibromyomata, are very pronounced. Thus, Woltering saw cessation of the hemorrhages in three cases of fibromyoma with a uterus-length of 9 and 8 ctm. In one of the cases the uterus-length had at the end of one year decreased 2 ctm. True, besides the drug, the patient had had the benefit of long-continued self-tamponage and warm washes. The remedy was ordered in pill form on account of its unpleasant taste. Ten grammes of the fluid extract can conveniently be evaporated down to about three grammes of a dry extract, furnishing an excellent pill mass. Woltering orders usually as follows :

R Extr. hydras. canad. sicci, 6.00;
(To be prepared from fluid extr., 20.00.)
Extr. secal. corn.,
Ferri redacti, aa 3.00. M.
F. fil., No. 120.

S.—Two to five pills every three to four hours.

Of course morphine, aloes, or any other indicated remedy could be incorporated with this styptic. The above pills are taken readily and well borne, especially when taken during or after the meal. Woltering claims that neither wine, aromatics, nor liquorice cover the taste of *hydrastis canadensis* sufficiently.

In simple hemorrhagic endometritis the remedy renders also excellent service. In profuse bleeding from the lungs and stomach, however, a tablespoonful of oil of turpentine appears to be preferable.

THE TREATMENT OF EXCESSIVE SALIVATION DURING PREGNANCY.

Owing to the ordinary insignificance of this ailment, few medical works contain a lengthened account of it. DR. Y. SCHRAMM, however, had the opportunity, in the autumn of 1885, of observing a very severe case, and he has published some notes of it in a Scandinavian journal. Numerous remedies were employed with very little effect, for at first he imagined the salivation to be due to chronic mercurialization ; but, later, he discovered that the patient was pregnant, and that pregnancy was the cause of the condition. Neither the iodide of potassium recommended by Le Maestre nor Von Ebstein's atropine treatment had any effect. Galvanizing the sympathetic also exercised only a very slight effect. Galvanizing the cervical sympathetic was resorted to with no perceptible result. Dr. Schramm then tried subcutaneous injections of pilocarpine

(as recommended by Von Labbe and Davyeux). After seven injections of pilocarpine chloride, 0.01 gramme ($\frac{1}{100}$ gr.) per dose, there was a diminution of the daily quantity of saliva, as well as improvement in the general health of the patient. The excessive secretion, however, could not be entirely stopped. Bromide of potassium was tried, which acted quickly in the reduction of the flow; and Dr. Schramm prefers bromide of potassium to all other drugs, as it is harmless during pregnancy, and yet exercises a distinct effect on the salivary nerves, and on the origin of the facial nerve in the medulla oblongata, and also on the secretory filaments of the sympathetic. Professor Fleck made a chemical examination of the saliva, and found that ptyalin was absent.—*Brit. Med. Journ.*, September 25, 1886.

THE SURGERY OF THE PANCREAS, AS BASED UPON EXPERIMENTS AND CLINICAL RESEARCHES.

DR. SENN continues his elaborate study of the surgery of the pancreas in the October number of *The American Journal of the Medical Sciences*. In connection with the subject of wounds of the pancreas, he strenuously maintains that complete extirpation of the head of the pancreas with the common duct is never justifiable, and that operations upon this portion of the gland for injury or disease, for the present at least, must be limited to partial excision of the head, with preservation of the common duct.

He finds that cirrhosis or chronic interstitial pancreatitis sometimes produces stenosis of the bile-duct or the pancreatic duct, and that, when the obstruction is followed by retention of the secretions, an operation becomes always necessary in biliary retention, which should be treated by establishing a new outlet for the bile into the duodenum, while the formation of an external pancreatic fistula in cases of cyst of the pancreas becomes necessary only when the presence of the swelling in itself has become a sufficient source of pain and discomfort to warrant treatment by abdominal section.

In pancreatic abscess he holds that a positive diagnosis of the presence and precise location of the abscess is only possible by resorting to explorative laparotomy, and that this should be always resorted to when the history of the case and the symptoms point to a probable diagnosis. The abscess found and located by abdominal section should be removed by partial extirpation of the pan-

creas when it is endopancreatic and located near the splenic end of the pancreas. When extirpation is impossible, or when it is located in the head of the pancreas or on the anterior surface of the pancreas, it should be treated by the formation of an anterior abdominal fistula; when located behind the pancreas, by through drainage, or lumbar drainage performed through the abdominal cavity.

The propriety of surgical treatment of pathological hemorrhage of the pancreas should only be entertained when the accident takes place in consequence of circumscribed, benign, pathological conditions, which in themselves do not jeopardize the life of the patient, and which admit of measures for arresting hemorrhage by direct treatment. Operative interference should therefore be limited to hemorrhagic cysts of the pancreas. In well-defined cases belonging to this group, it would be justifiable to resort to abdominal section as the only means of arresting fatal hemorrhage, by direct ligation of the bleeding points or by removing such localized portions of diseased tissue from which the hemorrhage has taken place.

A THERAPEUTIC SUGGESTION IN WHOOPING-COUGH.

DR. KOHLMETZ having passed through an epidemic of whooping cough, felt called upon to offer his therapeutic experience to the *Deutsche Medizinische Zeitung*, which published his communication on June 14, 1886.

The author dwells upon numerous remedies which he had tried without obtaining the slightest benefit. Among others, Kohlmetz mentions salicylic acid, which he applied to the nares in a number of cases, but soon abandoned on account of the inconvenience arising from this medication to the little patients. Quinine, given internally (according to the method of Dr. Sauerhering, of Stettin), gave likewise unsatisfactory results. Kohlmetz then tried the use of quinine in another form, which proved so eminently efficient that this mode of treatment deserves to be remembered by the practitioner. A solution of quinine is injected forcibly into the mouth, as far back as possible, against the posterior wall of the pharynx. To accomplish this end the tongue of a small child is well depressed by the mother with a suitable object, and a large child is made to pronounce the letter "a." The author declines to discuss whether the gratifying effects of quinine thus applied are due to its narcotic or antimycotic action. It

is certain, however, that the internal administration of the drug is not followed by such an improvement as is witnessed after this local application. Under this medication Kohlmetz noted in a great number of cases the whooping-cough to considerably diminish in three days, or, at the latest, in eight days. In the few instances in which the remedy was by the parents pronounced to be useless, Kohlmetz invariably learned that they, through motives of pity, had omitted the injections. In the majority of instances this procedure is not only well borne by the patient, but also openly asked for from the doctor. Kohlmetz's formula is as follows :

℞ Quinæ sulph., ʒi;
Acid. sulph., fʒss;
Aquæ dest., fʒvi. M.
S.—As directed.

During the first three days one syringeful is to be injected every two hours, and in the following four days every three hours. In very small children the quantity of injected quinine is to be correspondingly small.

Kohlmetz asks for his treatment further trials from other physicians in order to confirm his personal experience.

MANAGEMENT OF THE THIRD STAGE OF LABOR.

DR. A. R. FISHER, assistant in the obstetric clinic of Professor Slavianski, in Kharkoff, has made a large number of observations with the view of determining the relative advantages in the third stage of labor of Credé's system of gentle manipulation or massage of the uterus, and the method of forcible expression of the placenta by powerful compression of the uterus. His statistics point decidedly in favor of the former method. In four hundred and ninety-three cases where Credé's method was employed, post-partum hemorrhage occurred twenty-five times, while in one hundred and eighty-three cases where expression was resorted to, it also occurred twenty-five times,—that is to say, the hemorrhage cases were five per cent. with Credé's method, and thirteen per cent. with the expression method. Again, the retention of pieces of membrane occurred less frequently with the former than with the latter mode of treatment, the percentage of cases in which this occurred being 5.7 and 7.4 respectively. The relative proportions of the occurrence of pyrexia, by which was understood any rise above 38° C., the temperature being taken

three times daily, were 38.3° per cent. and 46.4 per cent., and the cases in which puerperal complications supervened were also fewer after Credé's method than after the more violent procedure, being respectively five per cent. and nine per cent. A diagram is given with the author's paper, which is published in the *Russkaya Meditsina* of August 10, showing that the process of the involution of the uterus is perceptibly quicker, at all events during the first week, in cases where Credé's method has been used, than in those where the placenta has been expressed. Dr. Fisher concludes with a general eulogy of Credé's method, as being the most rational and successful plan of treating the third stage of labor, and withal so simple that every doctor, and indeed every properly instructed midwife, should practise it habitually.—*Lancet*, September 18, 1886.

*PERNICIOUS ANÆMIA AND BOTHRIO-
CEPHALUS LATUS.*

DR. R. RUNEBERG, of Helsingfors, speaking at the Berlin Congress (*Wiener Med. Blätter*, September 30, 1886) about the relations existing between pernicious anæmia and intestinal parasites, remarked that he had found bothriocephalus latus to have been the cause of numerous cases of pernicious anæmia observed in Finland. After removal of the worm, the affection, previously apparently incurable, disappeared spontaneously. Of nineteen cases of pernicious anæmia treated at the University Clinics of Helsingfors, Runeberg could trace twelve to the presence of the parasite. From 1878 to 1883—when the anthelmintic medication was introduced at the clinics—Runeberg lost nine cases of pernicious anæmia, while after that period of nineteen cases treated only one died. Runeberg advances the opinion that even other intestinal parasites, which were hitherto regarded as harmless, could produce similar results. Reyher has confirmed the observations of Runeberg, and published a pertinent paper some time ago in the *Deutsche Archiv für Kl. Med.**

THE TREATMENT OF PARONYCHIA.

DR. SELLDEN writes in the *Eira* that he has for years made a special study of this subject. The greater number of his patients

* It is interesting to learn that Runeberg met with a good deal of opposition regarding this exposition of the etiological factors of pernicious anemia.

have been miners, smiths, machine laborers, servants, and others whose fingers are exposed to injury. The disease commences in the subcutaneous tissue and spreads to the periosteum. There are differences of opinion as to the varieties of this disease, some authors asserting that there are four, others that there are only two,—the deep and superficial inflammation. Dr. Sellden, after a series of trials, found the following method most efficacious in the treatment of paronychia. When the patient will consent to an incision, the finger, after it has been opened, is instantly plunged in a tumblerful of hot water, which is then allowed to cool till it is nearly lukewarm. Half a teaspoonful of arnica is poured in, and a teaspoonful of the usual ten per cent. solution of potassium is added. This mixture is highly anæsthetic; the finger is held in it for from fifteen to thirty minutes, when the "bad matter" comes out. This expression is very characteristic of the phenomenon. The blood and pus exude in a thin stream about the size of a knitting-needle, which forms circles in the alkaline liquid, and finally settles in a thick mass at the bottom of the glass. Fifteen minutes or half an hour after the finger is dried it is rubbed with vaseline ointment containing ten per cent. of sulphide of potassium. The finger is then immediately enveloped in a poultice which continues warm till the next finger-bath, and thus hastens the cure. These finger-baths are taken from two to four times daily, and the wound is covered during the earlier days with sulphur ointment, and later with a boracic ointment. The finger is then bound up with a wadding compress and a bandage. Carbolic acid may be used in the finger-bath, but Dr. Sellden gives the preference to arnica, which he finds particularly useful in all sorts of injuries.—*Lancet*, August 28, 1886.

NOTE ON THE PATHOLOGY AND TREATMENT OF FEVER.

DR. FINKLER, discussing the subject of fever at the Berlin Congress, said that the modern views regarding regulation of heat and infection, and the great number of recently introduced antipyretics, justify a discussion of the origin and treatment of fever at the present time. We must admit that in fever an increased production of heat takes place, and that this is referable to a disturbance of the nerve-centres presiding over the regulation of heat. In other words, Finkler regards fever as a neurosis, and believes to have proven his assumption in Pflüger's (Bonn)

laboratory. Fever is at the same time, in Finkler's opinion, a reaction, and, moreover, a salutary one.

In accordance with this view, the treatment of fever is to be a palliative one. It is safe to assert that the combination of baths and internal antithermic medication is the most successful plan of treating fever.

LANOLIN IN BLEPHARITIS MARGINALIS.

DR. J. HERBERT CLAIBORNE states in the *Virginia Medical Monthly* for October, 1886, that recently he has been making extensive experimentation with lanolin in blepharitis marginalis.

At first it was combined with the yellow oxide of mercury, in the proportion of two grains of the yellow oxide to one ounce of the excipient. Some of the patients complained of its stinging considerably on application, and one patient who had a corneal infiltration in addition to blepharitis, stated that on putting a little between the lids, the pain was quite severe, and lasted some time. It was then prescribed pure for this patient, and in this form no pain or stinging followed its application. Two crops of hordeoma were developed under its use in one case, though the same patient had already had styes during the application of warm water. At the time that the styes appeared under the use of the lanolin no warm applications were being made. There was no visible improvement in any case, either combined with the yellow oxide or alone, and the eyelashes were invariably matted and stuck together by the salve, which seemed to cling quite closely.

There was no *uniform* complaint of stinging. Of two patients, one would almost invariably answer in the affirmative, the other in the negative.

From the above observations, the author concludes that the use of lanolin in blepharitis marginalis is without good effect, and, as long as we possess cosmoline, vaseline, and other excipients, its use is not to be advised.

TREATMENT OF DIPHTHERITIC ANGINA.

DR. H. ROGER and PROF. PETER, of Paris, give, in *Les Nouveaux Remèdes* of August 1, 1886, the following therapeutic hints in diphtheritic angina: In the benign form give in the beginning an ipecac emetic (3 to 12 grains of powdered ipecac in an ounce of the syrup of ipecac in tablespoonful doses) every

five minutes, until emesis is produced. Apply locally twice a day lime-water, or a solution of borax or alum, or, finally, lemon-juice. In grave cases repeat the emetic once or twice, apply four to eight times daily saturated lime-water, and touch the fauces with a solution of caustic soda (caustic soda and glycerin), or with a solution of nitrate of silver (nitrate of silver, 15 grains; water, 1 ounce). In the former case the patient ought to rinse the mouth with vinegar and water; in the second case, with salt water. In both light and severe cases tonics and supporting nutriment (bouillons, beef-tea, and milk) should be freely given.

During convalescence the authors advise change of air, continuance of the supporting alimentation, and wine of cinchona. In remaining diphtheritic paralysis the electric current is to be resorted to.*

SUCTION OF THE MALE URETERS.

Before attempting to excise a kidney for disease it is obviously of the highest importance to ascertain the working capacity of the opposite gland, for upon the power possessed by the latter of bearing the double burden depends the advisability of the proposed nephrectomy. The only method in which data as to this point can be obtained is by collecting the secretion directly from the supposed healthy kidney without admixture of urine from the diseased organ. This may be accomplished by the use of an instrument for tapping the ureters described by MR. FENWICK in the *Lancet*, September 18, 1886. The principle of its action is a slight suction force, which is exerted upon the ureteral orifice by means of a catheter and a small india-rubber ball. Notwithstanding the normal bladder seldom or never thoroughly contracts, the smooth muscle-wall relaxes sluggishly after its expulsive effort is over. This relaxation, at the same time that it produces a partial vacuum, diminishes the sphincteric contraction of the ureteral orifices, and any urine which may collect in those passages is partially propelled by the *vis a tergo* of the muscle of the ureters, and partially sucked by gravity and this negative pressure into the bladder. The aspirator consists of a small elastic ball and an oval glass bottle, which can be fixed to the end of a specially curved catheter, which latter is furnished with an

elongated laterally placed eye. There are two catheters, one for each ureter. The bladder is first emptied and the catheter introduced. When it has fully entered it is rotated over, and at the same time steadied by the finger and thumb to the right or the left, according as the right or the left ureter is to be engaged. The laterally placed eye will now be exactly over the ureteral orifice, for the angle of the catheter is the same as the normal angle which the outer side of the trigone builds with the long axis of the urethra. Pressure of the right hand upon the elastic ball empties it of its air, and its stem is then affixed to the end of the catheter and the ball gradually released; the air in the catheter is correspondingly exhausted, and the ureteral orifice is sucked into the eye of the catheter, where it can be maintained by careful management of the ball or by continual counter-pressure of the finger in the rectum. In ten minutes sufficient urine will have collected in the catheter, for it rarely enters the glass bottle, to admit of examination. Mr. Fenwick states that whilst this mode of procedure is not infallible, it has rendered him great assistance in determining the health or disease of one kidney in cases where an operation for the removal of the other has been proposed.

ARE LUPUS AND TUBERCULOSIS IDENTICAL?

Our readers are aware that within the last two years the claim has been advanced that lupus is no disease of itself, as hitherto believed, but is, pathogenetically speaking, nothing but a tuberculosis of the skin. The acceptance of this view, which, we must admit, has been a rather general one, naturally was productive of radical changes in the treatment of lupus.

It is hence a matter of no small interest that at the recent Berlin Congress this view was declared to be erroneous by DR. SCHWIMMER, of Budapest. Let us briefly review the interesting discussion which subsequently arose, and in which men of wide reputation, such as Doutrelepon, Lewin, Lassar, Neisser, and Kaposi participated.

We follow the account given by the *Deutsche Medicinal Zeitung* of September 30, 1886:

Dr. Schwimmer holds that the proofs advanced in favor of the alleged identity of lupus and tuberculosis were too few and unsubstantial to overthrow the clinical evidences which he could present that the two diseases were non-identical.

* Henoch has in diphtheritic paralysis employed injections of strychnine with signal success.

The affection known commonly as tuberculosis of the skin is an extraordinarily rare one, while lupus itself occurs frequently. Among two thousand four hundred patients Schwimmer found ninety cases of lupus, but only five cases of pronounced tuberculosis of the skin. The clinical diagnosis in the latter affection is based on the bacterial proofs. In all of these five cases there was a rapid disintegration of the nodes. Besides, it is found that this affection invariably proceeds from the mucous membranes, while lupus appears on the epidermis, away from the mucous membranes, which, as a rule, this affection does not implicate. True, there have been observed cases of lupus on mucous membranes, but their number was very limited, and, besides, it is questionable whether the diagnosis was a correct one. Then the impression produced by the lupoid affection upon the general system is also to be taken into consideration. Tuberculosis, on the other hand, is a general disease, therefore it is not remarkable that lupoid patients sometimes become also tubercular. Hence we can look upon tuberculosis in a lupoid patient as a matter of mere coincidence. The author detailed two cases in which the clinical history went far in showing that the skin-affection present was lupus, and that the coexisting tuberculosis was an additional acquisition, having no relation with the lupus. Among ninety lupus patients Schwimmer found sixty-eight per cent. constitutionally untainted; in fifteen per cent. only he found a hereditary element. These facts speak against any etiological relation of the two diseases. Besides, it is at least singular that this relation, if actually existing, should not have been observed sooner. Schwimmer knows thirty-three cases of lupus, of which fifteen have for the last twelve years been under his observation, and of which not a single case showed the slightest symptoms of tuberculosis. As a last support of his view, Schwimmer advances the bacterial fact entering into the question. Many observers allege that in lupus but few, and but rarely, tubercle-bacilli are found. It is to be remembered that the tubercle-bacilli have a great resemblance to those found in lepra, both as far as form and chemical reaction go. Schwimmer shares the view of Prof. Babes, that the differentiation of the single bacillus is a matter of utmost difficulty.

Hence Schwimmer cannot, for all the reasons stated, be induced to look upon lupus as an affection either identical with or predisposing to tuberculosis.

As could be expected, Schwimmer's assertions met with a good deal of opposition from all quarters.

Doutrelepont (of Bonn) overthrew one of the evidences advanced by Schwimmer, viz., that fifteen lupoid patients had for twelve years shown no signs of tuberculosis, by remarking that tubercular processes do not take a uniform course. There are, he said, chronic tubercular inflammations of the knee, which proceed benignly, and others which take an opposite course. Similarly, a general tuberculosis need not be necessarily fatal, but may remain localized in one region for many years.

In forty cases of lupus the presence of the tubercle-bacillus was distinctly made out. Koch cultivated the lupus bacilli in sixteen generations, and found no differences between tubercle- and lupus-bacilli. Lassar, Lewinski, and Lewin, all of Berlin, equally opposed Schwimmer. Kaposi, of Vienna, alone upheld the latter's view. His remarks were introduced by what appeared an especial hit against the bacteriological school. "If the gentlemen," said the Viennese authority, "have microscopical evidences of the identity of lupus and tuberculosis, we cannot help that. But above all, the clinical features of an affection must be considered, for we are practitioners and not biologists. Otherwise we will be led towards false diagnoses."

Resuming, Schwimmer remarked he knew that he could hope for but few supporters of his views, and that all the opposing arguments heard could not induce him to abandon the former.

THE USE OF FRESH MILK IN THE TREATMENT OF ACUTE ARSENICAL POISONING.

DR. JOSEPH JONES reports in the *Virginia Medical Monthly* for October, 1886, the notes of three cases of acute arsenical poisoning in which fresh milk given in large quantities proved of great value. The first of these cases consisted of an entire family,—father, mother, four children, and a young woman,—who were poisoned by arsenious acid thrown into a pot of soup. In these cases the excitation of vomiting and the use of large and repeated doses of fresh milk, followed by rest and milk and lime-water, resulted in the recovery of the seven individuals. In the second case, Dr. Jones was summoned to see a family, of whom he found the father lying dead on the floor of the front parlor, while the wife, son, and four servants were suffering from violent

vomiting and cramps. Investigation showed that white arsenic, which had been purchased to destroy vermin and rats, had been used by accident instead of white sugar in the preparation of pastry. The free use of fresh milk and milk and lime-water resulted in the recovery of the remaining victims. A third series consisted of a family who had been poisoned by arsenious acid ground up with the coffee. Here also Dr. Jones administered large quantities of fresh milk, followed by ipecac and warm water. Profuse and repeated vomiting was thus excited, and the stomach was thus washed out with effusions of ipecac and warm milk. As soon as the nausea had ceased the bowels were opened with castor oil. Here also all the patients recovered. Dr. Jones thinks that the milk acts by diluting the poison, enclosing it in its coagula, sheathing the inflamed surface of the mucous membrane, and when the system is capable of absorption and digestion, acting as an aliment of the greatest value.

DEEP INTRA-MUSCULAR INJECTIONS OF MERCURY IN SYPHILIS.

We abstract from the *Separat Abdruck aus der Allgemein. Wien. Med. Zeitung*, 1886, Nos. 32-34, the following conclusions of DR. SCHADECK (of Kiew) concerning the advantages of deep intra-muscular injections of mercury in syphilis :

1. The injection is easily and quickly executed, and is less painful than the ordinary hypodermic injection.
2. Abscesses are never formed.
3. Coagulations, nodes, and indurations do not occur.
4. The metal is quickly and completely absorbed.

As to the technique of these injections but little skill and experience is required. A canula about three inches long is fixed on a Lewin or Luer syringe, and the needle quickly and deeply pushed into the upper or middle portion of the gluteal region in an almost vertical direction. Then the syringe is emptied under an even pressure, the point of entrance pressed by the fingers for a few seconds, and then closed by adhesive plaster.

A NEW TÆNIAFUGE.

DR. NUMA CAMPI calls attention in *Il Raccoglitore Medico (Buffalo Med. Journal)*, October, 1886) to the use of thymic acid, or thymol,

in the treatment of tape-worm. This substance is derived from one of the *labiate*, or thyme, which is common throughout France and Southern Italy. The plant contains a volatile substance and liquid essence called thymine, which is isomeric with turpentine, which is also a tæniacuge. It is doubtless to this volatile substance that thymol owes its anthelmintic properties, although the tannin and a bitter principle are of importance. Thymic acid, or thymol, when perfectly pure, resembles camphor, but is much more transparent, and has a glassy appearance.

It is very slightly soluble in water, but can be readily dissolved in alcohol, in ether, and in alkaline solutions. It has an acrid, warm, somewhat persistent bitter taste, and the odor of thyme.

We know but little of its biological effects. Lewin, a few years ago, claimed that it had valuable germicidal and antiseptic properties, and was four times more powerful for those purposes than carbolic acid. Bucholtz has recently made a comparative study of its germicidal properties, and finds that a solution of 1 part to 2000 will prevent the growth of bacteria, being surpassed only by bichloride of mercury, while benzoin, carbolic, salicylic, and boric acids, creosote, the sulphates of quinine, copper, and zinc, and alcohol are all inferior in their antiseptic powers. The action of thymol, moreover, is not limited to micro-organisms, but affects the higher animals and man. Lewin discovered that frogs placed in weak solutions of thymol became insensible, and lost the power of reflex action to mechanical and chemical excitation, while the electrical irritability of the muscles and nerves remained intact. Leucocytes are rapidly attacked by thymol and lose their motility. From the description of the properties of thymol it is not difficult to conceive that it may be usefully employed in the treatment of tape-worm, especially since the experiments of Federici have shown that it is very effective for the destruction of the *Anchylostoma duoënalis*,—the parasite which produces the terrible infirmity called Gottardo's disease, or miners' anæmia. But, in order to succeed with a remedy, it is not enough to know its physiological action, we must also know how to administer it ; posology is undoubtedly the most important and the most delicate part of the practice of medicine. This simple truth, so generally recognized by medical writers, must be particularly regarded in the use of anthelmintics, the effectiveness of which depends so largely on the mode of administration.

Dr. Vanni, in the first case of *tænia* treated by thymol, gave 3 grammes (gr. xlv) in divided doses through the day, and 20 grammes (3v) of castor oil at night, but succeeded in obtaining only five or six segments of the worm. On the following day, however, he administered 6 grammes (3iiss) of thymol, divided into twelve doses, to be taken every fifteen minutes, and at the end of the third hour the entire worm, including the head, was expelled.

Dr. Campi adopted the following method with his first case: In the evening he ordered 20 grammes (3v) of castor oil to be taken fasting; in the morning he prescribed 8 grammes (3ii) of thymol, divided into twelve doses, one to be taken every quarter of an hour; twenty minutes after the last dose had been swallowed, another 20 grammes (3v) of castor oil were taken. A few minutes after a *tania medio-canellata* three and a half metres in length was evacuated, the head being dead.

It is very important during the administration of the thymic acid to give the patient some cordial and stimulant; cognac and rum will be found suitable. Thymol is very depressing, according to the experiments of Husemann, and this will explain its action on the nervous system. Even with small doses the pulse becomes small and frequent, the respiratory movements slow, and the temperature is lowered. These effects, however, are easily and promptly counteracted by the use of stimulants.

Dr. Campi also calls attention to another fact. Husemann and Lewin say that thymol should be administered in small doses. On account of its caustic action, they claim that there is danger of producing digestive disturbances and gastro-enteritis. They recommended two or three teaspoonfuls of a one-half per cent. solution during the day. While it is true that we can never be too prudent in the practice of medicine, these doses are too fearfully homœopathic, when we consider that 8 grammes of thymic acid may be given in two hours and a half without producing the least gastro-intestinal disturbance.

The number of remedies recommended prove that none are reliable. The *tæniafuges* have left the physician and gone to the druggist, who sells his infallible vermifuges as he does his hair-restorers. We have only to ask any old practitioner about the use of anthelmintics to learn that this class of remedies is exceedingly unreliable. Most of these remedies, moreover, produce grave gastro-intestinal disturbances, and we are not surprised that Bamberger questioned which had done mankind

most harm, the tape-worms or the *tæniafuges*. Dr. Campi recommends to the profession the use of thymic acid as a *tæniafuge*,—

1. Because this remedy, with the exception of a depressing effect, easily counteracted, produces no disturbance of the stomach or intestines.

2. On account of the rapidity and simplicity of its action compared with other remedies, which require *courses of treatment*, divided into three periods,—the preparatory, the expulsive, and the consecutive.

3. On account of the advantages it offers of being both a *tæniacide* and a *tæniafuge*.

4. Because in case of an error of diagnosis the remedy would produce an efficient purgation and disinfection of the alimentary canal.

5. Because it is reasonable to suppose that since thymic acid succeeds in expelling the *tania medio-canellata*, the worm which above all others resists the action of anthelmintics, the same remedy will be of service in expelling all other varieties of flat worms.

6. Because we have, as yet, always been successful with the use of thymic acid, and have probably found a real specific, which, up to the present, did not exist:

GOITRE TREATED BY CARBOLIC ACID.

DR. O. E. HAVEN states in the *Weekly Medical Review*, September 11, 1886, that he has met with a large number of cases of goitre in the public clinics in Chicago, all of which have been materially benefited, and almost all cured by the injection of 20 or 30 minims of a five per cent. solution of carbolic acid once or twice each week into the substance of the gland itself.

To do this thoroughly the needle of the hypodermic syringe is inserted one-half to one inch into the gland, and then the injection is made. Little or no pain is experienced, but only a feeling of dizziness, of which all the patients complain, and which passes away in a very few minutes. Usually this injection causes a contraction and a hardening of the connective tissue of the tumor and a gradual lessening of the blood-supply, and in the course of eight or ten weeks a complete disappearance. Out of the one hundred and fifty or two hundred cases treated in this manner, there were only two cases where any inflammation and feverish symptoms appeared, and in these cases they only lasted a day or two. The treatment is simple, almost entirely painless, as the smallest needle of the

hypodermic syringe can be used and is entirely effective. No other treatment can show such uniformly successful results.

A SPECIFIC FOR CONSUMPTION.

The long-sought-for infallible drug against consumption has at last been found.

We abstract the following from the *Der Fortschritt*, Geneva, September 20, 1886:

M. NAUDIN, member of the French National Institution, writes to the *Journal d'Hygiène* that *mutisia viciæfolia* cures consumption promptly and thoroughly. This statement is based on the experience of Dr. Sacc, who has been living for many years in Cochabamba, and succeeded in obtaining the stated plant—which grows in Bolivia, and is jealously guarded and kept secret by the natives—by trickery, flattery, and great presents. The plant enjoys the enviable reputation of curing phthisis and every affection of the respiratory apparatus. Dr. Sacc claims to have frequently found occasion to witness the verification of these statements regarding the plant, and does not doubt for a moment but this plant will in the shortest time acquire great celebrity. If these claims of Dr. Sacc are true, *mutisia viciæfolia* will become the greatest benefactor of mankind.

Detailed knowledge regarding this plant is as yet totally wanting. Mr. Naudin received thirty seeds of the plant, collected from about two thousand flowers, from Dr. Sacc. These seeds were planted in the Jardin des Plantes and in Algiers, and we will no doubt soon hear more about the plant. More important for the moment is the news that Dr. Sacc has sent to the Hospital for Consumptives at London and to various hospitals in Paris large quantities of an extract prepared from the plant. Thus the results will probably soon be rendered public, and we all trust that for the sake of suffering humanity these results will not fall short of his expectations.

THE ALTERNATIVES TO CRANIOTOMY.

From a paper with the above title, read by DR. ROBERT BARNES before the British Medical Association at its recent meeting (*British Medical Journal*, October 2, 1886), the author draws the following conclusions:

1. The legitimate aspiration and tendency of science is to eliminate craniotomy on the living and viable child from obstetric practice.

2. The advance of hygienic rule, the improvements in the forceps, in turning, in the induction of labor, and in obstetrics generally, have materially curtailed the field within which craniotomy can be justifiable.

3. In the most extreme degrees of pelvic distortion, where delivery *per vias naturales* can only be effected with doubtful success to the mother, Porro's operation is the legitimate alternative for craniotomy, it being understood that the opportunity of inducing abortion has gone by.

4. In less advanced degrees of pelvic contraction, but still incompatible with the delivery of a living child *per vias naturales*, the opportunity of inducing abortion having gone by, but in which craniotomy would effect delivery with strong presumption of safety to the mother, the Cæsarian section may be a proper alternative for craniotomy. This is the most debatable point.

5. In the minor degrees of contraction, say from three inches to three and a half or three and three-quarters inches, the opportunity of inducing labor having gone by, the far greater safety to the mother obtained by craniotomy, and the prospect of living children in future pregnancies by inducing labor, make craniotomy the proper course to adopt.

6. In other emergencies than deformity, as in obstructed labor from ovarian tumors, the alternative to craniotomy is to remove the tumor.

7. In cases of immovable tumors, Porro's operation is the proper alternative.

8. In rupture of the uterus, the child being delivered or not, Porro's operation is the proper alternative. There the interests of mother and child coincide.

9. In cases of disease or tumors of the uterus obstructing delivery, Porro's operation is the proper alternative.

10. In atresia of the cervix or vagina, Cæsarian section or craniotomy may be necessary; but incisions and gradual dilatation will more frequently be the proper alternatives.

11. When obstruction is due to hydrocephalus or dropsy in the child, embryotomy or tapping is indicated. When the child is dead, embryotomy is indicated, and decollation when the child is impacted and turning is hazardous.

12. In convulsions and hemorrhages, the proper alternatives for craniotomy are found in the more scientific methods of conducting labor under these complications.

Lastly, but the dream of Tyler Smith, the abolition of craniotomy will be fully realized

only when hygiene shall have triumphed over disease and deformity.

CHIONANTHUS VIRGINICA.

In *Les Nouveaux Remèdes* of August 18, 1886, we find a few descriptive remarks about *Chionanthus virginica*,—called in France "snow-tree," on account of its beautiful white flowers,—from which we condense the principal pharmacological points.

Medicinally, the bark of the root alone is employed in form of a fluid extract; saponine, discovered by Dr. Justice, probably represents the active principle of the bark.

The fluid extract is usually employed in the dose of $\frac{1}{2}$ to 1 drachm, and is given two to three times daily for the sake of its aperient, diuretic, and alterative virtues. The drug is, besides, believed to act as a cholagogue, and to be of considerable value in jaundice. DR. J. A. HENNING, as stated in the THERAPEUTIC GAZETTE, indeed, regards the fluid extract of *chionanthus virginica* as one of the most eligible remedies in that affection. Although exercising a weak stimulating influence on the liver, Henning advocates its exhibition in cases of congestion of the portal vein. The drug is at the same time supposed to act as a stimulant to the lymphatic system, and to favor both diuresis and diaphoresis. In torpidity of the liver, Henning employs the drug, associated with podophyllin or leptandrin, as follows:

R Extr. of *chionanthus*, $\mathfrak{f}\mathfrak{z}\mathfrak{i}$;
Podophyllin, $\mathfrak{f}\mathfrak{z}\mathfrak{i}$;
Acet. of potassium, $\mathfrak{f}\mathfrak{z}\mathfrak{ss}$;
Water, $\mathfrak{f}\mathfrak{z}\mathfrak{iv}$. M.

S.—One teaspoonful every three or four hours.

The author adds that this treatment has never failed in cases of jaundice.

CURARE IN EPILEPSY.

In *La France Médicale* of September 14, 1886, we find a discussion of the therapeutic worth of curare in epilepsy which contains some noteworthy points.

BOURNEVILLE and BRICON, in a paper to the *Archiv de Neurologie* for March, April, and May, 1886, published their experiences with curare in epilepsy.

They commence by reciting the recorded experiences of numerous French physicians. Thus, Thiercelin (1861) obtained good results as long as the drug was continued. Bénédict

(1866) found it to diminish the severity and lessen the frequency of the attacks. Runge (1879) obtained numerous cures by curare. Mundt (1866) and Voisin (1867), however, obtained no appreciable results.

Bourneville and Bricon having made sure that their curare was good, and by experiment having found the proper dose for a dog, decided upon giving to the human being a dose calculated in proportion to the weight of the individual as compared with that of a dog, giving an adult weighing seventy-five kilogrammes a dose of curare of 15 cg. ($2\frac{1}{2}$ grains). The solution given hypodermically was an eight per cent. solution. They treated thirty-three patients, including adults and children. The treatment was continued in some cases for more than six months, with the following results: One patient alone was said to be cured, one was distinctly benefited, and the third has a lessening of the severity of the convulsions.

The conclusion that the authors draw from their practice is that curare is practically useless in the treatment of epilepsy.

THE PATHOLOGICAL ACTION OF CORROSIVE SUBLIMATE

According to the Paris correspondent of the *British Medical Journal* (October 9, 1886), since corrosive sublimate (mercuric chloride) has been so generally used in surgery, and especially in obstetric practice, the attention of medical men has been attracted to the various intestinal lesions which have fallen under their notice. It has been asserted that mercuric chloride can produce deep lesions in the large intestines. Complex clinical facts may be interpreted in different ways, and have, therefore, not furnished convincing proofs of this assertion. Some authors suppose that, in cases of parturition where the sublimate has been used, the visceral lesions are due to the septic condition existing in the patient, and that the sublimate is not to blame. Experimental data, especially those obtained by Prévost's experiments, described in the *Revue Médicale de la Suisse Romande*, 1882, p. 553, indicate that visceral lesions often result from the effect of corrosive sublimate. Similar lesions to those observed in patients were experimentally provoked in animals; ecchymosis and hemorrhage, but neither gangrene nor ulceration were observed. MM. CHARRIN and ROGER used an aqueous solution of corrosive sublimate at 1 per 1000, and 1 per 4000,

which was injected under the skin or into the veins; this last method required smaller doses. After injecting 2 milligrammes under the skin of a guinea-pig weighing five hundred grammes, several ulcerated areas were observed; the injection of 5 milligrammes given in the course of eighteen days, or 3 milligrammes in six days, was powerless. These animals, experimented on by MM. Charrin and Roger, did not present during life any important symptoms of intestinal lesion; they grew thinner, had albuminuria, but rarely diarrhoea, and never intestinal hemorrhage. When the dose of mercuric chloride was weak, the animals did not succumb to it; they were killed at successive periods, in order to follow the course of the lesions. It was observed that the morbid appearances were localized in the large intestines, and especially in the ascending colon and cæcum; sometimes the ileo-cæcal valve and the terminal portion of the ileum were attacked. The earliest lesion consisted of small spots of hemorrhage dotted about on the intestinal mucous membrane, the peritoneum, the omentum, the outer surface of the kidneys, and especially the tissue of the lung. At a later stage these spots appeared as small ecchymoses, forming lines parallel to the axis of the intestines, varying in length from three to four centimetres. Later on, these ecchymoses became more extended, and the central portions sloughed away. A black eschar was thus formed, which gradually fell off and left an ulcerated spot. The contiguous portion of peritoneum sometimes showed signs of inflammation. Intestinal perforation has never been observed by these investigators. Thus the principal lesion which occurs after free administration of corrosive sublimate is apparently intestinal hemorrhage, which slightly tumefies the intestinal mucous membrane, and thus disables it as a factor in the process of nutrition. This hypothesis was verified by microscopical examination, which revealed the presence of spots of hemorrhage in the areolar tissue. The mucous membranes became detached and sphacelous without any glandular change taking place, as might be supposed would result from the elimination of the poison. These facts in experimental physiology applied to human patients indicate that a dose of 24 centigrammes of corrosive sublimate is necessary to produce intestinal ulceration in a man of sixty kilogrammes; but the conclusion is not applicable unless the sublimate be given in hypodermic or venous injections. It

remains also to be proved whether human susceptibility to the influence of this substance is the same as that of the lower animals; some clinical facts suggest that smaller doses of corrosive sublimate act on the human subject and provoke intestinal lesions. Nevertheless, MM. Charin and Roger do not consider that the possibility of these accidents ought to be urged as a reason for proscribing the use of corrosive sublimate as an antiseptic agent.

THE TREATMENT OF DIABETES WITH PEPSIN.

In the *Indian Medical Gazette* for August, 1886, there is published a paper by the late SURGEON-MAJOR E. B. GARDNER as to the value of pepsin in the treatment of diabetes mellitus. About twenty-five years ago he commenced to prescribe it, and believes that he has obtained more advantage from its use than from any other single drug, although it should be combined with the standard remedies for this affection, and the well-known rules regarding special diet should be observed. He thinks that its use permits of some relaxation of the strict diet which it is impossible to continue if the disease is prolonged.

He reports a case in which, although not entirely cured, the sugar in the urine was reduced to one-third the quantity it was when he first came under treatment, while the patient was able to freely eat starchy and saccharine substances with comparative immunity, again an improvement over his previous condition, where before the slightest indulgence in sweet substances produced immediate and a large increase in the sugar, with attendant intense thirst. During the course of this treatment a cataract operation was performed on his right eye, and resulted in a perfect cure.

He administered 5 grains of pepsin three times a day. Its continuation for six weeks reduced the quantity of urine passed from thirteen pounds eight ounces to five pounds daily.

THE TREATMENT OF CHRONIC GONORRHOEA IN THE MALE.

DR. O. D. BALL, in a paper read before the Medical Society of the County of Albany, N. Y. (*Albany Medical Annals*, June, 1886), takes exception to the statement made by Otis that all cases of gleet are dependent

upon strictures, either of large or small calibre. Dr. Ball is thoroughly satisfied that a fair proportion of these cases have no stricture, at least none that will resist the passage of a sound the normal size of the individual's urethra. Of course where strictures are to be found they are to be treated, and the full calibre of the urethra restored before any other means for checking the discharge can be resorted to. Of all the various methods proposed to accomplish this Dr. Ball prefers incision for very many reasons, of which the greatest is the saving of time that it allows. In the method which Dr. Ball recommends for treating chronic gonorrhœa, the recognition of the diseased portion of the canal is a matter of considerable importance. This, according to Dr. Ball, can be determined by the character of the discharges quite as well as by a sound in a sensitive urethra. In a general way Dr. Ball states that we may say that the disease is mainly anterior to the bulb when the discharge is a thick creamy mucus; when of a thin or viscid character it comes from the prostatic portion mainly. Having determined the locality of the inflammation as nearly as may be, Dr. Ball employs an ointment of oxide of zinc applied directly to the diseased membrane, using an olive-pointed bougie for carrying the ointment. The author has employed this method of treatment in fifteen cases, ten of which had contracted the disease six months or more before treatment, and in all cure was obtained. The average treatment of the cases was a little over four weeks. The longest in any one case which was under treatment was eight weeks; the shortest was ten days, except one case, who never saw any discharge after the first application was made. The formula which he employs is as follows: Zinc oxide, 3 drachms; lard, 3 drachms; simple cerate, 2 drachms. The method of using this ointment, which will adhere nicely to the bougie and yet be soft enough to apply itself to the urethral membrane, is to fill the constricted portion of the bougie out evenly and as smoothly as possible with the full calibre of the instrument, which may be lubricated with vaseline if the parts are sensitive. The bougie should be carried at once to the prostatic portion of the urethra as rapidly as possible, and then, after rotating it in both directions, it should be slightly withdrawn and then pushed back again, treating the remaining portion of the urethra in the same way. The patient should always empty his bladder previous to the application, and should be instructed to refrain from doing so again

as long as possible. The application should be made at least twice a day.

GYMNOCALDUS CANADENSIS.

We abstract the following note about this drug from the September issue of *La France Médicale*:

The seed of *Gymnocaldus canadensis*, which is also known by the name of Kentucky coffee-bean, has the reputation of being a powerful toxic agent, resembling Calabar bean, with which it is allied. The watery extract of the drug modifies the sensibility considerably. Five minutes after a hypodermic injection of this preparation the frogs were insensible, and would not respond to irritation. With a moderate dose the sensibility of the conjunctiva remained, and on increasing the dose the anæsthesia became complete; perception and sensation became abolished. Motor troubles, consisting of general convulsive movements, the rigidity and subsequent paralysis of the muscles being complete, resulted. These phenomena had their origin in the central nervous system. The drug, besides, lessens the activity of the cardiac nerves, and acts as a stimulant to the pneumogastric nerve. The cardiac pulsations are diminished by one-half; and, finally, there is a lowering of the arterial tension.

THE USE OF SOME NEWER REMEDIES IN DISEASES OF THE UPPER AIR- PASSAGES.

At a recent meeting of the American Laryngological Association Dr. E. L. SHURLEY (*New York Med. Journ.*, September 11, 1886) read an elaborate report as to the results which he had obtained by the employment of a large number of some of the newer alkaloids and glucosides when used topically in diseases of the upper air-passages. As Dr. Shurley's experience has been very large his results must naturally be of proportionate value, and we therefore think that we are doing our readers a service by presenting a full abstract of his conclusions.

Aconitine.—Dr. Shurley has records of twenty-five cases in which it was used either in the form of a spray or pigment. Two were cases of laryngeal phthisis; seven of chronic pharyngitis,—in five of which there existed acute exacerbation; eight of acute pharyngo-laryngitis; three of chronic follicular amygdalitis; three of chronic laryngitis; and two of pharyngeal neuralgia. The amount used each time varied from $\frac{1}{16}$ to

$\frac{1}{160}$ of a grain. In each instance there occurred in a few minutes the well-known physiological effects of tingling of the tongue and feeling of choking and numbness, to which were superadded, when applied in the nasal fossæ, lachrymation, with sneezing and vertigo. On two occasions these local symptoms were very severe and distressing to witness.

Only once did he observe a marked effect on the pulse immediately after the application. With a small dose— $\frac{1}{160}$ grain—these symptoms passed away in about two hours; with the larger doses from four to six hours elapsed before the patient became comfortable.

As to the local effect, in every case there arose in a very short time, almost immediately, an active hyperæmia. Even in the case of phthisis the pale color was deepened to a vivid rose, or a near approach to it. The ulterior effect was, in the acute cases, to cut short the course of local inflammation; in the cases of chronic pharyngitis, etc., there was no permanent effect, the cases of pharyngeal neuralgia—severe paroxysmal pain on one or other side of the pharynx—occurring respectively in a pregnant woman and in a woman suffering with supposed chronic inflammation of the ovary. The application of the pigment with a brush twice daily produced immediate and marked relief, although not a cure.

From these observations, therefore, he thinks that this agent as a local application was of little benefit, except in a few particular cases, while its very unpleasant effect upon the sensations of the patient was entirely out of proportion to its therapeutic value.

Agaricin (a glucoside from the *Boletus laris*).—From the good effects in the abatement of nocturnal sweating which he has observed from the administration of this agent, Dr. Shurley was led to use it topically in a few cases of chronic nasal and pharyngeal disease, but, as he did not observe any physical or therapeutic effect, he has nothing to report at present.

Arbor Vitæ.—On account of its reputed efficacy in causing the disappearance of syphilitic warts, Dr. Shurley was led to use this drug as an application to intra-laryngeal papillomata. In one case, that of a boy 14 years of age, who was suffering with a progressive growth of these tumors on the vocal cords and ventricular bands, it certainly acted remarkably well. Only one of the growths—the largest—was removed by the forceps, the others disappearing under the use of a spray of the aqueous extract, applied

once or twice daily, for a period of about three months.

In another case, in an adult, where there were five papillomata in the region of the anterior commissure of the vocal cords, this remedy only partially succeeded, the forceps having been resorted to for the larger ones. The treatment, however, seemed to prevent their renewed growth.

In still another case, one of cystic tumor of the right vocal cord, the arbor vitæ has had no effect whatever, unless, perhaps, to suppress catarrhal inflammation.

He has also used arbor vitæ in the local treatment of some cases of chronic laryngitis with benefit.

In preparing the fluid extract for spray, to render it unirritating it will be necessary to drive off nearly all the alcohol by means of heat, boiling it down to a syrupy consistence, and afterwards add water to the amount of one-third to one-half of the amount distilled off, then filter.

Ammonium Glycyrrhizate.—As a spray he has obtained no particular effects. Dr. Shurley prescribed it for a large number of cases of acute and chronic bronchial catarrh, in doses ranging between 2 and 5 grains. In the chronic cases it seemed inferior to ammonium chloride and ammonium iodide, but in the acute uncomplicated cases it has proved itself a valuable expectorant.

Cannabine Tannate (from *Cannabis indica*).—On account of the difficulty of making a solution of this substance, Dr. Shurley used it mostly in the form of powder mixed with starch, or in the form of an ointment with vaseline. He has used it in about fifty different cases, sixteen of which he has notes of, and a majority of these were cases of nasal or naso-pharyngeal disease. It possesses astringent properties, and is also a decided local stimulant. When applied undiluted to the nasal mucous membrane it causes considerable irritation, which lasts for a period of two to four hours, producing lachrymation and swelling of the turbinated mucous membrane. But when applied diluted with starch in the proportion of two to five grains to the drachm or with vaseline in like proportion, it has, as a rule, no such irritation, but a decided astringent, and afterwards soothing effect. It has proved a valuable agent, according to his experience, as a substitute for tannic acid, which latter he has ceased to use in the nasal chambers on account of its irritating effect; with children suffering from swelling of the nasal mucous membrane, either acute or sub-

acute, it will prove an excellent and efficient application, especially when mixed with vaseline.

Cadmium Sulphate.—This salt, which has been highly extolled as an astringent, is not superior to sulphate or chloride of zinc. Dr. Shurley used it as a spray and pigment in about thirty cases, in the proportion of from one-half to five grains to the ounce, and has noted no particularly beneficial result over zinc sulphate and chloride or silver nitrate, excepting in one case where the unpleasant results following the application of any solution of silver nitrate forbade its use. The cadmium certainly acted well, and seemed to bring about the desired result.

Cotoin (the active principle of coto bark).—Although there is not much literature upon this subject, it is reputed to be a good remedy for chronic diarrhoea and the diarrhoea of phthisis. Dr. Shurley administered it in two cases of diarrhoea of phthisis, but without signal success. He used it locally in about twenty cases of nasal and pharyngeal disease, twelve of which he has notes of. It is a powerful irritant to the nasal and pharyngeal mucous membrane—both healthy and diseased—and leaves no reactionary effect. Its best effects are obtained in cases of atrophic nasal and pharyngeal catarrh, and, when diluted in starch or sugar in the proportion of one part to three or four of excipient, it is, according to Dr. Shurley, quite equal if not superior to any other application—excepting galvanism.

Coniine Hydrochlorate (a salt of the alkaloid of *Conium maculatum*).—From the well-known selective action of conium on the muscular system and sympathetic nerve, one would suppose that this alkaloid—readily diffusible as it is—would act signally as a corrective in those local disorders of the throat and larynx characterized either by co-ordinate or ordinate spasm, etc.

Dr. Shurley has notes of ten cases representing various spasmodic actions of a pathological nature of the pharynx and larynx, one of which was an hysterical laryngeal cough, and one a local chorea, in which he applied this agent repeatedly in progressive doses (both by means of spray and pigment) without any sensible result in modifying the diseased action. He is therefore disposed to regard it as wanting in value for a local medicament.

Daturine (an alkaloid from *Datura stramonium*).—From the known value of stramonium as an anti-spasmodic, and its especial utility in the relief of spasmodic asthma, he

was led to give this alkaloid a thorough trial as a topical remedy in affections of this sort.

He has notes of twenty-three cases subjected to experiment, as follows: 1, bronchial asthma; 1, spasmodic asthma; 2, periodic laryngeal congestion; 3, hay-fever; 1, chronic bronchitis (bronchorrhoea); 3, hysterical pharyngeal catarrh; 5, influenza; 1, laryngismus (with ovarian disease); 2, chronic naso-pharyngeal catarrh; 2, acute coryza; 2, chronic laryngitis.

The dose varied from $\frac{1}{100}$ to $\frac{1}{50}$ of a grain, and in some of the cases was repeated two, three, or four times a day; in each case, when the dose was large enough or frequently enough repeated, there appeared to the patient sooner or later the characteristic sensation of dryness of the fauces, etc. The patients with asthma were not sensibly affected by the treatment; two of those with hay-fever were very much benefited by the applications if repeated often enough (it was used in the form of spray), but the trouble was not arrested; three of those with influenza were decidedly relieved by three applications daily of a spray ($\frac{1}{100}$ of a grain), while the two others were not at all relieved. The neurotic cases were only relieved by a diminution of secretion, which, however, lasted but a few hours, necessitating a repetition of its use.

Ethyl Bromide.—This has been used almost entirely as an inhalation for the relief of cough. Dr. Shurley tried it in a large number of cases; it is not quite so efficacious as chloroform, but there is much less general anæsthesia from its continued use, and it leaves no unpleasant after-effects. He thinks, therefore, that it is deserving of more extended use for the relief of severe dry cough and spasmodic asthma.

Hyoscyine.—The hydrobromate is the salt which has been used. He has been unable to note any marked effect, proximate or remote, from the local use of this salt,—excepting in a few cases there arose a sensation of dryness which passed off in about an hour.

It produces no apparent change in the condition of the mucous membrane to which it is applied. The doses used varied from $\frac{1}{100}$ to $\frac{1}{50}$ of a grain.

Iodol.—Dr. Shurley used iodol in a few cases of ulceration of the mucous membrane, both specific and ordinary, and observed that it has nothing like the power to arrest the ulcerative process which iodoform possesses, although he cannot say but that slow improvement and healing followed its use. It

is sincerely to be hoped that this substance will prove to be a capable substitute for iodoform, because it is free from odor and causes no bad taste. He always applied it by insufflation.

Papain (papaw juice).—In one case of diphtheria he applied the fresh juice, and in six other cases it was used in the form of a glycerole,—either one-half or two-thirds strength; but no solvent action was observed on the exudate in any case. He adds that this was the experience of two other practitioners in his city, who also tried the remedy in cases of diphtheria. Therefore, so far as this limited experience goes, it has utterly failed to sustain its reputation as a remedy for the relief of real diphtheria.

Muscarine Sulphate (alkaloid of *Agaricus muscarius*).—Very little is known about this drug, but it is said to resemble in its physiological action that of physostigmine. Dr. Shurley applied it in doses of from $\frac{1}{16}$ to $\frac{1}{8}$ of a grain in twelve cases characterized by dryness of fauces and larynx, without any result excepting in two. One of these patients presented signs of great dryness of the fauces, and lack of buccal and salivary secretion, accompanying general nervous prostration; and the other had "dry catarrh" of the pharynx and larynx. In both of these cases a spray, repeated three or four times a day, seemed to afford great relief. The immediate effect was a pleasant tingling sensation, soon followed by comfortable heat and more secretion. No effect on the pupil was observed. In the other cases no immediate or remote effects, either objective or subjective, could be observed.

Physostigmine Salicylate.—This was thoroughly tried in a number of instances, of which he has six recorded. In but one instance did it produce any physiological action, or in any obvious way relieve the pathological condition of the parts. This case was that of a delicate young man who had from time to time suffered from spasmodic stricture of the lower pharynx and œsophagus; he experienced almost immediate relief from an application of $\frac{1}{16}$ of a grain, which lasted about six hours, when another application became necessary. At the end of forty-eight hours the attack ceased. Nothing which the writer had ever used locally in this man's case had acted so well as this agent in cutting short the course of the attacks.

Pilocarpine Hydrochloride.—Dr. Shurley has five recorded cases of pharyngeal catarrh characterized by a sensation of dryness and

consequent distress in which he has tried this remedy, in doses varying from $\frac{1}{16}$ to $\frac{1}{4}$ of a grain, but without any positive result.

Piscidin (a glucoside from *Piscidia erythrina*).—Dr. Shurley has nine cases recorded in which this was used either as spray or pigment, in doses ranging from $\frac{1}{16}$ to $\frac{1}{4}$ of a grain. In only one instance could there be observed any proximate or remote effect, and that was a case of phthisis characterized by a very persistent and aggravated sensation of tickling referred to the pharynx. In this subject the application of a pigment in the proportion of $\frac{1}{16}$ of a grain to the drachm, every two or four hours, seemed to relieve the trouble in two days.

Resorcin.—Although attention was first called to this agent in 1860,—when it was presented as a supposed substitute for carbolic acid,—yet medical literature does not show that it has been at all extensively used until very recently. Dr. Shurley used it considerably during the past year, and believes it to be an important addition to the pharmacopœia. It is practically odorless and tasteless, while it is soluble in water; it is very feebly caustic, and, although a weak, still an efficient antiseptic. He has the records of thirteen cases in detail in which resorcin was used with good effect. Three were secondary syphilitic ulceration; one, tertiary; six, ozæna,—of which one was an aggravated case where the turbinated bones had disappeared; one, eczematous lupus of nose and pharynx; one, ulcerating and eczematous lupus; and one, typical herpetic pharyngitis.

The case of ulcerating lupus needs some additional remarks, inasmuch as it was a peculiar one; the subject, a child 9 years old, had been suffering for nine months; first with an obstruction of the nasal passages and an irritating discharge therefrom, followed gradually by the growth of fungous granulations in these passages and about the edges of the nares and upon the roof of the mouth (about the centre of the hard palate). When he saw her in February, 1886, there were extensive ulcerating granulations in the nasal passages and upon the surface of the roof of the mouth as well as at the margins of the nares; the nasal column was also ulcerated and its cartilage denuded. The patient's general condition was also much below par. Having anesthetized her, he destroyed with the galvano-cautery all the fungous tissue that he could reach and applied iodoform thoroughly. The iodoform was applied for

several days, as was also resorcin (in the proportion of one to four and one to six), but the main treatment afterwards consisted of resorcin used as a spray or pigment. The galvano-cautery was applied to two small spots in the mouth once since, but otherwise the treatment has consisted of the application of resorcin (and vaseline to moisten the parts) every day, conjoined, of course, with a recuperative and tonic plan of treatment. He saw the patient last on the fifth of this month (May), and observed that she was in good health, with very little deformity about the nose, and no reappearance of the trouble excepting at a spot situated on the inside of the cartilaginous nasal column. She is still under treatment. In the cases of ozæna, especially the one with the loss of the turbinated bones, the effects of this agent, used once or twice daily, as spray, were quite prompt, and it seems remarkable. The patient was under treatment about five weeks. He saw him about two weeks ago, and he told Dr. Shurley that he was comparatively free from trouble, and had been for the last three months; he uses a douche every day (as might be expected) of salt and water. Has no pain now and no more discomfort than is usual after such a lesion. The ulcerative process is apparently checked.

Sanguinarine Nitrate (a salt of the alkaloid of *Sanguinaria canadensis*).—No special results follow the local use of this drug, but for internal administration in a certain class of cases it is highly useful as a stimulating expectorant. He has noticed no unpleasant effects or depression from it in doses of $\frac{1}{16}$ to $\frac{1}{4}$ of a grain in syrup.

ICE-WATER ENEMATA IN TREATMENT OF DIARRHŒA.

DR. ROBERT M. SIMON, writing in the *British Medical Journal* for October 30, 1886, states that this mode of treatment has frequently been adopted in cases of collapse occurring during diarrhœa in young children at the Birmingham General Hospital. He recommends that ice should be dissolved in water and from two to three ounces injected. In his experience, which he says has been quite extensive, the immediate effect is good in producing sleep, as is important in the collapsed condition. Subsequently the effect upon the diarrhœa is also good, and it will rarely be found necessary to repeat the enema. Dr. Simon thinks that the cold enemata act by an astringent effect on the

loaded vessels of the intestines, and so diminish the intestinal flux. It has sometimes been found to be expedient to give a few drops of brandy about the time of the injection, and perhaps internal medication should be continued. In his experience no depression or bad effect has ever resulted.

Reviews.

NEW MEDICATIONS: By Professor Dujardin-Beaumetz.
Translated by E. P. Hurd, M.D., etc. Parts I. and II.
Detroit, Mich.: Geo. S. Davis, 1886.

So many new methods by so many men, new and old, crowd upon the practitioner, that he must either become a bookworm and abandon practice for reading, or, ignoring them all, allow his patients to suffer in the old-fashioned way. For such men nothing of late has appeared in print more useful than the condensed but practical and explicit work before us. Part I. contains, among others, chapters on "New Cardiac Medicaments,"—convallaria majalis, caffeine, and trinitrine,—with briefer mention of adonidine, sparteine, cactus grandiflorus, and cereus bonplandi. "New Methods of treating Stomach Diseases," which contain remarks upon gastrotomy, gastrostomy, and gastrectomy, the use of chloroform-water, carbon-disulphide-water, used in "lavage" of the stomach, forced feeding, or "gavage." Chapter iv., on "New Gastro-Intestinal Medications," treats of the application of electricity to stomach and intestines, of enteroclysm, alimentary lavements, anæsthesia by the rectum, and the treatment of hemorrhoids by hamamelis virginica. "Antiseptic Intestinal Medications" and "New Pulmonary Medications" complete the topics of Part I., while Part II. contains the pulmonary medications, treating of the mechanical means recently brought into use by the pneumatic cabinet, and by various modifications of its principles; in short, all the change in method and medicaments produced by the discovery of the bacillus tuberculosis are here studied, and the relative value of the different agents employed subjected to close scrutiny. "Antiseptic Pulmonary and Pleural Medication" forms the subject of two chapters, which are followed by "Antithermic Medicaments," new and old, by a chapter on the "New Hypnotics," chloral and paraldehyde, "On New Analgesic Medicaments," and "On Local Anæsthetics," the latter containing a close study of cocaine. The reader

can see from the above how large and important a field is covered by these two small volumes of the Physician's Leisure Library.

A MANUAL OF DIETETICS. By J. Milner Fothergill, M.D. Edin.

New York: William Wood & Co., 1886.

A really good book on dietetics would save more lives than a new work on therapeutics, but in the last few years the profession has made rapid strides towards scientific and rational feeding. The author says, "The day of dietetics has arrived," yet a careful reading of his pages will convince any one that there is, with much progress, much still to learn. We do not yet perfectly understand the intricacies of digestion, but each year we draw nearer to its sanctuary. We can now proceed on fixed principles, and at least formulate a truly scientific method of feeding. We may have to unlearn many things now considered as settled, and there is still a vast field for the explorer.

Dr. Fothergill is always an interesting writer. His style is captivating, and never more so than in the opening chapter on "The Objects of Food." Here one can see what unscientific feeding has been in the past ages of the world. In the chapter on "Forms of Food, with their Digestion," the author has embodied almost everything known on the subject, but in "Methods of Preparing Food" and "Condiments and Sauces" is contained the very rationale of cookery. "Condiments are curiously omitted from the dietary of invalids" is a sentence which deserves attention. The chapters on "Beverages" and "Stimulants" will attract alike the indulger and the abstainer, and contain a world of solid sense and carefully-digested experience. The chapters on prepared foods and artificial digestive agents will enlarge the knowledge of most readers considerably. The author expresses the wish that his knowledge of the prepared foods of the United States was as extensive as of those of Great Britain; and, *vice versa*, the medical man of average reading will find many preparations mentioned by the author by no means familiarly known to himself. Of peptonized foods the author gives a complete and satisfactory account. Following him as a guide, their use would be restricted to cases where they can be reasonably expected to be useful. He does not believe in "making a pauper of the stomach," by assisting it too soon or too long. The author gives careful directions for peptonizing milk gruel,—milk gruel soups,

jellies, and beef-tea through the use of liquor pancreaticus,—and for peptonized enemata.

In Part II. we have chapters on "Food in Infancy," "Adolescence," "Adult Life," "Old Age," in "Acute Disease," "Convalescence," "Gastric Affections," in "Struma," "Anæmia," in "Constipation and Diarrhœa," in "Phthisis," in "Chronic Heart- and Lung-Disease," in "Bright's Disease," "Diabetes," "Gout," "Neurosal Affections," in "Obesity," "Indigestion," and "Biliousness," and in some other conditions, and the work concludes with a chapter on "Food given otherwise than by the Mouth." The reader can see what a wide field is covered, and while some of the subjects are treated briefly, they are treated carefully, as is the chapter on "Food in Obesity," which covers less than four pages, yet in that space we have not only an explanation of the reasons of obesity, but a careful description and analysis of the methods of Banting and Prof. Ebstein, with the author's comments on both. The chapter on "Gout" is thoroughly practical, and its material is very largely drawn from the author's own observation. It would form useful reading for many other than medical men. The author, however, leaves out of the question any consideration of gouty dyspeptics, as he would otherwise render his "chapter more complicated than desirable," and in doing so fails to show us how ably he might struggle with the complicated problem. Leaving out the gouty dyspeptic leaves out the greater part of the difficulty, and enables him to fall back upon the time-honored advice to eschew meat,—“No gouty man can drink malt and eat meat at the same time without paying the penalty.” Of lager he speaks more favorably. Of wines, he reserves for the gouty “a poor thin wine, as the poorest claret or corresponding Italian,” while spirits with water form “the best drink beyond doubt, and help to wash the uric acid out of the tissues.” In the chapter on “Food in Diabetes,” which the author distinguishes from simple glycosuria, giving his weighty reasons for so doing,—reasons which should be read and carefully considered by those who are ready to put their patients upon the rigid diet of the diabetic upon the first detection of sugar in the urine,—in this chapter the author raises many questions concerning the necessity for rigid diet. This is a thoroughly practical question, and very ably handled. “Is it, or is it not,” he asks, “the fact that many persons fairly to be regarded as diabetics suffer much more from their diet-

ary than their malady?" In fact, he believes that during the quiescent periods of diabetes in many cases some relaxation should be allowed, and can be allowed with benefit rather than injury. In "Food in Constipation and Diarrhœa" the author says, "So long as animal broths are permitted so long will diarrhœa be intractable." Again and again, he remarks, has this been "driven like a spike" into his memory. Yet it is only a few years ago since beef-tea was the staple diet of typhoid patients, and in regard to the question of beef-tea the author is exceedingly plain and decided. In fact, the book is full of suggestions, and if not the ideal work on the subject, is the nearest to it in our knowledge, while the author's graphic style tends to fix his ideas upon the mind, and renders them far more valuable. In short, it is a work that all practitioners should read and re-read, and endeavor to use in their every-day work.

THE GENUINE WORKS OF HIPPOCRATES. Translated from the Greek, with a Preliminary Discourse and Annotations by Francis Adams, LL.D., Surgeon. Two volumes. Vol. II.

New York: William Wood & Co., 1886.

To those who cannot read Hippocrates in the original Greek, and who are tormented with a burning desire to read him anyhow, this work will commend itself. Perhaps there may be in his writings much of practical and real value, but most of it has long since been incorporated in the works of modern authors. Possibly more is found in his pages than he ever dreamed of himself. The modern method of Biblical criticism applied to ancient medical works is capable of discovering almost anything the discoverer desires. But to those intending to settle in Greece, to engage in active practice at Parnassus or Olympus, the book will be invaluable.

In looking through this second volume, we at least carry away one fact. Hippocrates has protested against the modern heresy of homœopathy in no feeble words. "It is the business of the physician," he says, "to know in the first place things similar and things dissimilar;" and in his mind the "dissimilar" was of equal importance with the "similar."

Throughout the work the annotations of the editor are copious and wonderful; especially is this so in the "aphorisms." The more sententious the aphorism the more voluminous the annotation, and they at least serve to show us what the translator imagined his author to mean.

To those who are fond of ancient lore the work will undoubtedly prove a valuable and interesting possession.

MEDICINE OF THE FUTURE; AN ADDRESS PREPARED FOR THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION IN 1885. By Austin Flint, Sr., M.D., LL.D.

New York: D. Appleton & Co., 1886.

This address, never delivered as intended, has been published by the son of the late Dr. Austin Flint from his father's manuscripts, and now speaks to a larger audience than even the British Medical Association could have afforded. It is written in a happy vein, in its author's usual style, and deals, as its title imports, with speculation as to the future progress of our art. Of course no very pertinent prophecy could be anticipated, or if it contain such, time has not yet fulfilled it, but it is well worth reading, both out of regard to the rare man who wrote it, and for the interest which gathers about such speculations from a man so actively engaged in a practice of fifty years. Some of his words are words of warning, some of encouragement and hope, and over it all is a shade of sadness at the thought that the pen that wrote it, the mind that conceived it, are both at rest, and can take no part in that future progress of which he so hopefully wrote.

THE USE OF ELECTRICITY IN THE REMOVAL OF SUPERFLUOUS HAIR, AND THE TREATMENT OF VARIOUS FACIAL BLEMISHES. By Geo. Henry Fox, M.D., etc. The "Physician's Leisure Library."

Detroit, Mich.: Geo. S. Davis, 1886.

Hair tonics and restoratives which are not dyes have had their day, and here the hair-destroyer steps to the front, and immediately we are made aware of the immense number of individuals, mostly females, whose lives are rendered miserable by superfluous hair. It has struck us, since so many of these cases exist, that it may be possible that poor, blundering Nature grew these hairs where she did under the mistaken impression that they added beauty to the feminine lip, and that our Anglo-Saxon standard of feminine facial hairlessness might be a mistake. Of course, like every one else, we draw the line on chins anyway. One hardly could wish even an enemy's grandmother to have chin whiskers, and so the superfluous hair-destroyer is not in any case wholly superfluous. As a rival to the depilatory he deserves encouragement, for the depilatory takes skin and hairs and everything but bones, and can so easily be applied by the unscientific with such dire results that

the very difficulty of the electrolytic process is a point in its favor.

The complete method is given by Dr. Fox in his small but carefully-written work,—all the details, the difficulties, the failures. With the proper battery and instruments, which he minutely describes, and with a steady hand, good patience, and some practice, we imagine that most men can become successful superfluous-hair destroyers. We are waiting for the hair-planter next.

E. W. W.

THE MODERN TREATMENT OF EAR-DISEASES. By Samuel Sexton, M.D.

Detroit, Mich.: Geo. S. Davis, 1886.

This book presents a classified list of over two thousand consecutive cases of ear-disease at Dr. Sexton's aural clinic, New York Eye and Ear Infirmary. It is intended to "bring into prominence the more practical features demanding treatment." "The cases have been divided, according to the anatomical location of the disease, into nine sections,—auricle, external auditory canal, drumhead, middle ear tract, complication of diseases of middle ear tract, mastoid process, important symptoms of ear-disease, neuroses, deaf-mutism." The author remarks in the introduction that a more complete classification will be found at the end of the book.

This book contains a fund of valuable information on diagnosis and treatment, not alone for the aural specialist, but still more for those members of the profession who, possessing some knowledge of aural disease, and daily meeting cases in practice, are a little at a loss at times, and while retaining the treatment in their hands, long for the more accurate knowledge of special study. There is nothing very technical or abstruse in the presentation of the cases, but they are very clearly described, very usefully classified, and in the appendix will be found a full account, well illustrated, of the methods, instruments, and formulæ used.

HOW TO CARE FOR THE INSANE. A MANUAL FOR ATTENDANTS IN INSANE ASYLUMS. By Wm. D. Granger, M.D., etc.

New York and London: G. P. Putnam's Sons, 1886.

The author of this little work has no new system for the management of the insane to introduce, no new theories to ventilate, but aims at supplying the intelligent attendant with a reliable and compact handbook, in which he will find directions for most emergencies and for the better conduct of his reg-

ular daily work. He gives a slight sketch of the nervous system, an outline of the generally accepted facts concerning mental diseases, and discusses insanity briefly, with its hallucinations, illusions, and delusions. The delusion, by the way, of thinking one's self a king or queen is one, according to the author, rarely met with in our free and favored land. "He does not expect such things among Americans." He probably expects his patients to imagine themselves ward politicians, rounders, and political bosses, or perhaps missing treasurers, bank defaulters, or delinquent city officials. Such are the beneficent effects of free institutions. Of moral insanity he says, "There are those who claim that the moral nature alone may be diseased."

"Many delightful friendships," he remarks, "are formed between attendants and patients." Probably those with homicidal mania form the warmest attachments, and "there is more appreciation and gratitude among the insane than there are contrary feelings;" but for all this we appreciate, we trust, the author's work, and recommend his manual as a book likely to be of use to those for whom he designed it. With how much deeper appreciation and gratitude the insane themselves would regard it we can form no estimate.

E. W. W.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES, EMBRACING THE ENTIRE RANGE OF SCIENTIFIC AND PRACTICAL MEDICINE AND ALLIED SCIENCE BY VARIOUS WRITERS. Illustrated by chromolithographs and fine wood engravings. Edited by Albt. H. Buch, M.D. Vol. III.

New York: Wm. Wood & Co., 1886.

The late Dr. Austin Flint, in his "Medicine of the Future," said, "Voluminous encyclopædic works have probably had their day," and "there is reason for thinking that textbooks which assume to extend over the whole domain of medicine will soon belong to the past;" but in spite of these wise words of a wise man, we think we see a wide field still open for such books as the "Reference Handbook," by no means a "handbook" in the sense of being small and convenient. It is so elaborate, full, and complete that one almost wonders whether, equipped with its series in full, the practitioner would need anything more. Certainly, when all the learning in these volumes has been assimilated and stored away in one brain, its possessor would be well provided for. The scheme of the work is very ambitious, and its execution commensurate with its editor's intention. Its

type is excellent ; its illustrations profuse and apt ; the articles written by men of authority and learning in their special lines at least. Take its articles on the "Forceps," on "Fractures," on "Fungi," as illustrations. Nothing more complete could be desired or expected. The article on "Fungi" especially is illustrated with chromolithographs of wonderful perfection, and will prove a true boon to the mushroom-eater, causing him to have one shudder the less as he eats his dubious meal. The anatomical topics, too, are extremely well illustrated, as also the section on "Hospitals, Hygiene, and Habitations," the latter giving the most perfect description of the various appliances for house drainage that we have ever met. In short, it is a work the first complete view of which will almost of necessity raise in the beholder the passion of possession. For in these busy times, when every moment is of value, when in want of information, there should be some reliable and ready method of obtaining it, and until the world grows slow again, we imagine that just such handbooks as this will be held in a very increasing esteem.

E. W. W.

Correspondence.

LONDON.

(From our Special Correspondent.)

On the 1st of October medical life in London awoke from its pleasant autumn siesta. We are all back in town and hard at work again. Hospital practice has been resumed with fresh vigor. The medical schools are crowded with young and eager hearts, starting fresh on the course which many of their teachers would fain themselves again pursue. The societies have one after another had their opening night. It is at the societies as much as in the hospitals that a visitor among us can see the active spirits of our professional world ; and it occurs to me that those of your readers who have not yet crossed the water may be pleased to hear something about these gatherings.

The most important of our professional societies is the Medical and Chirurgical Society, which is nearly as old as the century. This is the Royal Society of Medicine in England : possessed of convenient if not imposing rooms and a very fine library, and publishing an annual volume both of "Transactions" and of "Proceedings," which are highly valued. This society is supposed to

attract the more elaborate papers produced with us,—papers that embody the results of research, of purely scientific bearing, or that do not readily fall under a clinical or a pathological heading. One hears complaints that "the Medico-Chi" is not sufficiently frequented by the younger men ; but of this more anon.

Older even than the Royal Medical and Chirurgical Society, indeed a ripe centenary, is the Medical Society of London, which, after a somewhat checkered career, has renewed its youth wonderfully within our recent memory, has built itself a handsome house, has reorganized its library, and has returned to fresh activity generally. The Medical Society is the least severely scientific of all our larger societies. It attracts many general practitioners to its meetings, and is thus a most valuable institution to the profession here, not only as being a social link between the family doctor and the consultant, the importance of which it would be difficult to exaggerate, but also because it introduces into our discussions the very kind of experience in which some of the members are comparatively wanting,—the experience of family practice. These remarks apply with even greater force to the Harveian Society, a small institution compared with those I have just mentioned, but one *par excellence* of and for the general practitioner, with a wholesome sprinkling of consultants to represent the hospital element. It is at the Medical and the Harveian that one may expect to hear real useful therapeutics discussed,—therapeutics stripped of the gloss of scientific novelty and put to the test of routine general practice.

Next to the Medico-Chirurgical in respect of scientific position come three societies which you may see regularly reported in our journals,—the Pathological, the Obstetrical, and the Clinical Societies. These are all very flourishing bodies, full of attraction to the more energetic spirits among us, publishing their respective "Transactions" every year. An evening at the Pathological is much affected by our youngest men. This is practically a society for the exhibition of specimens of morbid anatomy, with occasional discussions on subjects of pathology proper. The work of the Obstetrical Society corresponds so far with its name, but "gynæcological" would have been perhaps a more correct title. It fortunately attracts a fair number of general practitioners.

Lastly, we have the Clinical Society, which is of the most interest to your readers and myself in our present relation, inasmuch as it

was originally intended to be mainly a therapeutical society,—a society to which its members might bring for report and for discussion not only their observations but the results of their attempts at scientific treatment. It is comparatively a young institution, having seen but eighteen sessions. The Clinical was started as a kind of protest against the all-absorbing tendency of the Pathological Society. It was an attempt to bring us back to the consciousness that our business as doctors after all does not end with an attempt to lay a vast foundation of pathological science on which the medicine of the future may be surely built, but should be directed also to the relief of present suffering. You will agree with me that the following words of one of the greatest masters of modern English medicine, the late Sir Thomas Watson, which were spoken by him at the inaugural meeting of the Clinical Society, deserve to be disinterred from the first volume of the "Transactions," published in 1868 :

"The society which we are founding to-night seems to me well-calculated gradually to bring about that which, in my judgment, is the thing most needful at present among us,—I mean, more exactness of knowledge, and therefore more direct and intelligent purpose, and more successful aim, in what is really the end and object of all our labors,—the application of remedies for the cure or relief of disease. Certainly the greatest gap in the science of medicine is to be found in its final and supreme stage,—the stage of therapeutics. . . . We have attained to a great degree of certainty in the detection and discrimination of disease in the living body. We know tolerably well what it is we have to deal with ; but we do not know so well, nor anything like so well, how to deal with it. . . . To me it has been a life-long wonder, how vaguely, how ignorantly, how rashly, drugs are often prescribed. We try this ; and, not succeeding, we try that ; and baffled again, we try something else ; and it is fortunate if we do no harm in these our tryings. . . . Of therapeutics as a trustworthy science, it is certain that we have, as yet, only the expectation. The influence of drugs upon the bodily conditions of health and disease is, indeed, most real and most precious to us ; and some of them we have learned, in our contests with disease, to wield with much confidence and success."

It is wonderful how unwillingly we accept these unanswerable propositions at this moment in London. The *raison d'être* of the

Clinical Society is only too clearly illustrated by its history. It constantly tends to relapse into a society for living *versus* dead pathology. Members bring their patients there, or read their cases there, but in the whole course of an evening you may never hear a word about treatment, always excepting the surgeons, who freely avail themselves of the opportunity to publish their novelties in the way of operations. This, for example, was the programme of the opening meeting on the 8th of October : A case of congenital malformation of the heart, with a discussion on the pre-diastolic murmur ; a case of undeveloped sexual organs, with congenital defect of the tonsils ; a case of pulsating tumor of the head, with Raynaud's disease ; and further notes of a case of renal lithotomy. The truth is, that therapeutics is at a discount at this moment in England. The term "scientific therapeutics" is scouted by many here. Whilst your American journals, especially the THERAPEUTIC GAZETTE, are filled with papers of great value to the practitioner of medicine, many of our most active minds will not bend themselves in the direction of drugs. There are several reasons, as it seems to me, for this state of matters :

First, the problems of pathology are ever more attractive in such a place as London. Whether on the living subject or in the *post-mortem* room, "material"—as our German *confrères* rather irreverently call the *corpus vile* of the human frame—is ready at hand in abundance. Trained in the latest methods, our junior hospital men can quickly get together a case or a paper on a novel tumor or an anomalous eruption. It is a very different matter to undertake a laborious and faithful research on the value of a remedy, which may cost months of incessant labor, where a few imperfect observations may ruin a whole series, and where the result may after all be disappointing. Scientific therapeutics is not the kind of occupation to commend itself to us in these days of life-at-high-pressure. It is hardly necessary for me to add that the neglect of drugs has led to comparative ignorance of their action and uses, which, in turn, has begotten a widespread scepticism of pharmacology. I trust I may be forgiven for using the word "ignorance" when I explain that I refer to ignorance of the modern pharmacology of established remedies,—of the alkalies, iron, lead, antimony, opium, quinine, ergot, broom, etc. Men who have but little faith in physic do not trouble themselves to add to their ancient knowledge of these commonplace remedies,

and they are only brought into an attitude of attention when some new drug is introduced into practice. Their opinion of scientific therapeutics is founded on an estimate of the value of novelties, which are, alas, only too often of but evanescent reputation!

But we are not entirely without hope. I am reminded to-day of a quarter from which our favorite subject may look for the inauguration of a better order of things. The Harveian Oration was delivered this week on Harvey's birthday at the College of Physicians; and at this college there is a fair prospect that an effort will be made to follow the advice which their immortal Fellow left behind him,—to "search out the secrets of nature" by the revival of scientific therapeutics. Twelve months ago the then Harveian orator, Dr. Quain, lamented the decline of the healing art, and pleaded for the endowment of a therapeutical lectureship. The appeal did not fall on deaf ears. I have heard that the college has determined to apply at least part of the funds accruing to it under the Croonian trust to the endowment of an annual lectureship on some subject "in anatomy, physiology, or pathology, with a view to the prevention, control, and cure of disease." You may smile at the amount of thankfulness which I express for so small a mercy as this clause extends to us; but I anticipate with confidence that this lectureship will encourage and foster that kind of practical therapeutical research in our hospitals the absence of which I have just lamented.

This letter would be incomplete without a few words about our junior societies. Within the last year or two we have had three hard-working societies on special branches of medicine started in London,—the Ophthalmological, the Dermatological, and the Neurological. These three bodies have these features common to them, that they "mean work," and that the members are more anxious to promote mutual improvement in the knowledge of the several specialties which they represent than to distinguish themselves publicly. I have little doubt they have a long and useful future before them.

"RHODAN"

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I take the liberty of calling your attention to a little matter which once puzzled me a good deal, and I think may some of your other readers.

On page 536 of the August number is an abstract of an article on the action of *rhodan*. I think very few will know that *rhodan soda* (of the Germans) is nothing more than our familiar sodium sulphocyanide.

WALTER MENDELSON, M.D.

No. 209 WEST 46TH ST., NEW YORK,
November 9, 1886.

GRINDELIA ROBUSTA AND YERBA SANTA IN BRONCHITIS.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIR:—In looking over an old number of the THERAPEUTIC GAZETTE (November, 1885), I noticed a reference to an article I contributed to the *Medical News*, on the combination of the fluid extracts of *grindelia robusta* and *yerba santa* in bronchitis. Now, as there is a typographical error in the formula as given in your reference, and you have characterized the article as obscure, I would like to make the following explanations and correction through your valuable journal.

I have always found the following combination to produce the most salutary results in the first or pre-exudative stage of acute bronchitis, and to be especially effective in relieving the tickling, irritating cough which supervenes on assuming the recumbent position. I have used this combination for about five years in hundreds of cases with better results than I have been able to obtain from any other preparation. It is also valuable in the second stage of acute bronchitis and the chronic form of that disease; but here in our high altitude (six thousand seven hundred and thirty feet), at least, it exerts its most favorable influence in the first stage of the acute form of the disease.

R Fluidi extracti yerbæ santæ,
Fluidi extracti grindeliæ robustæ, aa ℥i;
Syrupi tolutariz vel simplicis, q s. ad ℥viii. M.
Sig.—℥i or ℥ii every hour or two as needed for cough.

A more concentrated preparation than the above will cause nausea in certain cases, and not act more effectively than the weaker mixture above indicated.

Very truly yours,

E. STUVER, M.D.

RAWLINS, WYOMING TERRITORY, October 28, 1886.

PROPRIETARY MEDICINES.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—This question is being freely discussed by the medical profession, and the

expression generally is in opposition to their manufacture and sale, except it be under certain restrictions or regulations.

That we may be the better prepared to apply the remedy to any evil, it is oftentimes necessary to know the cause that produces the evil, and in the consideration of this subject we think it very necessary to consider the cause that has led to, and now sustains, this extensive traffic, because it is sustained by the people, and there must be a cause for their having drifted into such an expensive and injurious habit.

In this, as in many other investigations, we cannot trace out one cause, but find many influences that tend to accomplish the same end, but a few stand out prominently and exert the controlling influence in establishing and perpetuating this traffic, which, if removed, would do much to banish a business which is so pernicious to the people and against the success of the true physician.

Polypharmacy has probably done more than any other one thing to create a demand and perpetuate a desire for proprietary medicines. The physicians who indulge in polypharmacy to the extent that their prescriptions contain from four to twelve agents, must of necessity have volume to obtain a compound that can be endured at all, and their patrons have come to look upon a large volume as being necessary. They look for it and expect it, and if they do not receive it they feel that they have not received the worth of their money, have put a commercial value upon the medicine, instead of recognizing the professional ability, and always contrast the bill with the sized bottle received, instead of the knowledge and skill manifested in diagnosis, prescription, and cure.

Empiricism, or routine practice, the twin brother of ignorance and stupidity, also forms an important factor in engendering and continuing this traffic. Oftentimes we find physicians who have a routine in practice. They give pills to physic, and quinine as a tonic after the patient has been "cleaned out" by the physic, or they have become so skilled in their knowledge of disease and the action of medicines that they can treat successfully a large per cent. of cases by their favorite compounds. They have an ague compound, a cough mixture, an alterative syrup, a cholera cordial, a liver pill, etc., and every person afflicted with ague, irrespective of age, sex, or condition, is prescribed for from the same compound, and each of the mixtures are dispensed in the same general way, until their

patrons look upon them as medicine-venders, and again compare the amount of medicine received with the bill charged, and again with the amount that can be secured of the druggist for the same money, and find the amount to be greater, and therefore invest their money where they get the *largest* returns, thereby reducing the business of the physician to the plane of commercial exchange.

Prescribing proprietary medicines, or preparations so closely allied to them that it would require greater discriminating powers than is usually exercised to distinguish the difference.

The country is flooded with almanacs, receipt- and picture-books, containing laudatory accounts of the magic power of some "old and reliable remedy," or of some "new and wonderful discovery," that is so potent for good that many of the "eminent" physicians are prescribing it daily with marvellous success, and close with a number of certificates from the M.D.'s of the wonderful cures effected, thereby impressing the people that the practice is made up by prescribing such compounds, and again they are led to compare the amount prescribed with what they can obtain from the druggist for the same money, and estimate the curative art from a purely commercial basis.

How often do we find the physician inquiring through some medical journal the composition of some compound which he has been using, but of which he knows nothing, except it has been highly recommended, for the case in hand, and that results are not always satisfactory!

What we need to banish forever the baneful influence of proprietary medicines is a profession that will study to know the signification of certain pathological symptoms, and strive to know the actions of remedies singly, and search to know the relation of symptoms and remedies, thereby enabling them to meet certain symptoms with certain agents with as much certainty as we expect emesis after the administration of ipecac or lobelia, or catharsis after the administration of podophyllin or Epsom salts.

Prescribe singly, as far as possible, thereby learning the action of the various agents in the concentrations and attenuations, and learn what conditions can be met and relieved in the best possible manner in the least possible time with our various remedies.

Banish compounds from our shelves, and, if needed, prepare specially for the case, thereby teaching our patrons the important truth that no remedy, single or compound,

can be successfully prescribed in a "class" of cases known by a certain name, but that each case must receive its special treatment in accord with the special conditions that exist.

The American people are a dissipating people. They desire to work hard, late and early, physically and mentally, gormandize and engage in innumerable excesses, and yet be free from pain and enjoy the blessings of health; and if they do not, they hope to right all things by means of drugs, the satanic deception of which is found in the form of hypnotics in a large per cent. of the proprietary medicines, which, by their quieting influence, delude in the idea that restoration is being effected, forgetting the important truth which every physician should impress upon the minds of his patrons, that health can neither be perpetuated nor restored by means of drugs while living in open violation of the hygienic and dietetic laws governing health.

A. S. HUSTON, M.D.

PENDLETON, IND., October 29, 1886.

CONCERNING NOSTRUMS, ETC.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—About semi-occasionally there is a howl sent up about proprietary articles, quacks, etc. Now, let us look at the subject of nostrums from a rational standpoint.

Scarcely a day passes but what the "busy practitioner" receives circulars for some wonderful preparation designed for the relief of suffering humanity: appended to this interesting pamphlet is a list of diseases in which this discovery "may be used to advantage" (that is, to the financial advantage of the proprietors); following this list will be found recommendations from physicians, many of whom occupy professors' chairs in medical colleges. How much they receive for their endorsement we humbler representatives of the profession, of course, do not know; but one thing is sure, and that is, that students, as a rule, look at their professors as being nearly infallible, and, accepting blindly their words as medical gospel, will naturally use these nostrums composed of—what? The manufacturers alone know, and they trust to the credulity of the profession for their income; they are sharp enough to put at the end of the circular in prominent type, "*Sold only on physicians' prescriptions*," and also send their agents around to distribute samples; then, for fear the M.D.'s vanity

will not be tickled enough, complimentary letters are written. This special mark of attention is simply another tickle under the ribs, causing an additional enlargement of the bump of "self-esteem" when we consider our importance.

The doctor "in ordinary," I am sorry to say, is not a reasoning animal, hence mental exertion is to be sedulously avoided; besides, there is Gull & Co., who manufacture remedies that will cure any human ailment: if the patient perchance die, why, "The Lord giveth, and the Lord taketh away," etc.

Now, the cause for the production of these nostrums, or "why is this thus?"

The majority of physicians talk of and prescribe for diseases as though they were entities, not pathological conditions.

The Indian supposes sickness to be the result of the presence of evil spirits, which must be exorcised. Not quite as crude, but equally as ridiculous, is the idea held by too many of our profession at the present day.

Now, let every physician, when called to see a patient, sit down and study the case before him, endeavor to discover the lesion, then do his own prescribing, using remedies whose value and composition are known and recognized, instead of the ready-made prescriptions put up by the considerate manufacturer, and whose real composition is veiled in obscurity.

Again, instead of trying to legislate against nostrums, etc., for the protection of the "dear people," let the doctor be what the name implies,—a teacher. Teach our patrons such simple hygienic laws as should be known by every one for the avoidance of the simple ills that result from their neglect. Show the public that we are not wholly selfish, and as we educate them to a right method of living, though at first it does not put as many shekels in our pockets, in the long run we will be the gainers,—for the reason that the sale of nostrums will be diminished, the respect and reputation of the doctor increased (and necessarily his practice), which should be synonymous with wealth.

Just as well legislate to make men honest as to stop the manufacture and sale of nostrums. Education alone will do the work, hence it is the duty of physicians to do their own thinking, which will of necessity compel them to fit the remedies to the patient, instead of the reverse; then will the manufacture of preparations "for physicians' use only" cease, but also the demand for those other nostrums which load the shelves

of drug-stores under the name of "Proprietary Medicines" gradually become extinct.

So long, however, as the physician, when a patient feels a little "off," tells him to go to the drug-store and get a box of "Carter's Liver Pills," "Castoria," "Winslow's Soothing Syrup," or a blood-purifier, conveying the idea, meantime, of disease as an entity, just so long will nostrums be put on the market and find a ready sale.

The profession must look among themselves for aid in abolishing this evil,—for evil it is,—not to the Legislatures of their States; for in other cases it has been pretty conclusively shown that prohibitory laws do not prohibit.

In fact, whenever the people are ready for a measure, then and only then will it be adopted, and until that time we are only "kicking against the pricks" in trying to gain legislative measures on this subject.

Now, instead of issuing a "legal boycott" on these manufacturers and their preparations, let us by study and application fit ourselves so that *we* are the best judges of what the patient needs, then give it; in this way the nuisance of nostrums will die a natural death of suffocation.

The physician should be a better judge of what is required by his patient than a man or set of men in China, Sandwich Islands, or any place, except at the bedside.

KENT O. FOLTZ, M.D.

AKRON, OHIO.

MEDICAL LEGISLATION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—It is my wish to make a few suggestions to Dr. F. T. Field, of Elroy, Wisconsin, and other of the readers of the GAZETTE who do, or who think they need, the protection of legislative enactments.

They should commence by instructing the people publicly and privately concerning proprietary medicines where nothing is or can be known about mixtures when no formula is given.

Physicians should not "hide their light under a bushel," but let it *so shine* that the people will not patronize proprietary mixtures.

If they wish to do anything in bringing about favorable legislation, they will have to commence long before the primaries by first selecting a man for the place who will do your work (he should be a good worker); then have an understanding among the physicians of the State or districts to work for the men so chosen.

If they (the physicians) have tact and will work together, they can nominate any man or men they wish. If a man is nominated who is opposed to your measure, commence talking against him to some of his warmest friends. He will visit you (for he cannot afford to have any influential physician against him). You can then make your demand, and, of course, he will promise to aid you. Have him put that promise in writing for use among physicians only, and, as a reminder to the Hon. Gentleman from Juneau County, a witness or two to that signature might be useful to strengthen the case.

If you ask for a law, do not ask for one unfair or exclusive, as you would fail to obtain it, which would serve you right.

If you do not succeed the first time you try, do not become discouraged and write to the THERAPEUTIC GAZETTE complaining of your ill success, but try again at the next session.

Have your bill ready, and have it introduced, read, and referred to the Committee on "Rights and Privileges." In the mean time write a letter, urging the passage of the measure, to every member of each branch of the Legislature with whom you are acquainted, and have all of your medical friends do the same all over the State.

If each member should receive half a dozen letters and as many petitions from his constituents he would think that law was in great demand, and he would not only vote for it, but would be anxious to do so.

I had a little experience a few years ago in getting an "Anatomy Law" passed in our very conservative State. I drew the bill and had it introduced, and to my surprise it passed the House of Representatives by a large majority, and lacked but one vote of passing the Senate the first round! The next Legislature I had it introduced again, and it passed the House but failed in the Senate. The third time I sent it to the member of the House from my own county, but he returned it to me with the assurance that "*it would fail*." I sent it to a younger member, and it was introduced, when a physician, who had been a member at each of the three sessions, had it modified and passed, and it is the law to-day.

Our "Medical Practice Act," passed in 1855, came in the same manner, excepting it was worked upon for twenty years before it became a law.

Legislatures are very conservative bodies. They will not make radical changes unless

the demand for them is very urgent. Usually the worst foes to anything of the kind are physicians. They are the very ignorant ones or those who "stand high in the profession," and fear they will lose their standing if the ignorant ones are legislated out of business.

Suggestively yours,

I. B. WASHBURN, M.D.

RENSELAER, INDIANA.

Notes and Queries.

TREATMENT OF ACUTE AND CHRONIC NASAL CATARRH.

DR. H. MARKS, of St. Louis, writes us as follows:

"I have a very good prescription for a snuff for acute or chronic catarrh, also traumatic rhinitis and acute coryza, especially when accompanied with pain of the nasal nerve. This formula effects a cure in twelve hours. It can be used as a snuff by the patient himself or in a powder-blower.

R Cocaine hydrochl., gr. x;
Ol. eucalyptus, gr. iii;
Iodoform, \mathfrak{z} i;
Milk sugar, ad q.s. \mathfrak{z} i. M.
Ft. triturate (snuff).

Sig.—Use every two or three hours. When relieved use two or three times a day.

"Another formula which I have found of service is a modification of that recommended by Beverly Robinson, which is as follows:

R Pul. fol. belladonnæ, gr. xx;
Cocaine muriate, gr. v;
Ol. rosæ, gtt. i;
Pulv. gum acaciæ, ad q.s. \mathfrak{z} ss. M.
Ft. triturate (snuff).

Sig.—Use with the powder-blower for anterior and posterior nares."

FLUID EXTRACT OF JABORANDI AS A LOCAL APPLICATION IN ECZEMA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Having used fl. ext. jaborandi in erysipelas with good results, I have given it a trial in two cases of eczema, and have been so pleased with its action that I send brief reports of cases, asking others to make trial and report.

CASE I.—Male; aged 35; American. Each spring has an attack of acute eczema. Father subject to same. Eruption in patches all over body; intense itching. Gave internally liq. ars. et hyd. et iodidi, and ordered fl. ext. jab.; applied full strength to eruption. Itch-

ing relieved after first application. Recovered in a few days.

CASE II.—Physician; aged 60; American. Chronic eczema of the forehead of many years' standing. Skin very much thickened and cracked. Said he had tried everything he could learn of, and wanted me to see what I could do. Intense itching very disagreeable when air came in contact, so that he had to keep covered with a handkerchief. Applied fl. ex. jab.; full strength caused sharp burning for a few seconds. Reported in an hour he could stand contact of the air without discomfort. Continued application for several days, two or three times a day. Skin became thin; abrasions healed. Reports that he can only feel a slight discomfort when he becomes very warm. Feels so well he neglects to apply the remedy.

I report these two cases thus briefly, hoping others may more fully try and report progress with the remedy.

Respectfully,

G. W. ROBINSON, M.D.

TRINIDAD, COLORADO.

HELENIN.

Alant camphor ($C_6H_{10}O$).

The alant root (starwort) and extract drawn from it. Helenii had enjoyed for a long time the repute for being counter-irritants, and during the last few years helenin has been introduced. It is in form of colorless, neutrally reacting needle crystals. The melting-point is at 110° C. It is almost insoluble in water, but dissolves readily in hot alcohol, ether, and fat, or ethereal oils.

The views as to the value of this remedy were and are still divided. Merck, in his circular, calls attention to the substance, because it has lately again attracted the interest of physicians, as the increased demand and numerous literary publications abundantly prove. DR. KORAB deduces from the antiseptic qualities of helenin its power of subduing tuberculosis, malaria, and catarrhal diarrhoea. According to Dr. Korab, one part has the power to protect 10,000 parts of urine from putrefaction.

Dr. Valenzuela obtained excellent results in cases of whooping-cough. Chronic bronchitis always disappeared after the use of helenin. Dr. Valenzuela points out as constant symptoms after the application of the remedy, the abatement of cough, of asthma, and of pain in the chest; a narcotic effect helenin does not produce. It acts as a tonic

on the digestive organs, so that it may even be given to consumptives suffering from severe diarrhoea.

Dose, 0.01 grm. helenin ten times a day ; of the tincture (1 to 5), three times daily, five drops.

In the department Gillette in the Hôpital Tenon at Paris there is an antiseptic dressing material used under the name "Hélénol du Dr. Korab," which very likely is a solution (alcoholic) of helenin.

CRYSTALLINE SALICYLATE AND SULPHATE OF PHYSOSTIGMINE.

• These preparations, which enjoy the deserved attention of the medical world, do not require a general description. Of particular interest surely is the fact, recently proved, that eserine administered in very small doses against diarrhoea produces a remarkably lessening effect, while so far it was only known that larger doses act as purgative.

The fact that very small doses of eserine reduce the pressure of the blood, and larger doses increase it, is well known. This is based simply upon a lowering and raising of the activity of the heart. In connection with the laxative effect of the eserine prescriptions, the local action of the same agent upon the bowels has to be carefully considered. The peristaltic movement would be largely increased ; the same may assume such dimensions that "cramp of the bowels" would have to be taken into consideration. Even after death this cramp continues for some time ; the contractions connected with the same compress the intestinal vessels and expel the blood, so that the secretion ceases. Thereupon rests the recommendation of this remedy against cholera, but it seems improbable that a medicine of so diverging action should find extended internal application during an epidemic.

Attention is further called by Merck in his circular to the prescription of physostigmine against intoxication, with atropin and hyoscyamine, or daturine and duboisine respectively ; dose for this purpose, 0.002 to 0.005 grm. subcutaneously. The advantage of this medicine is essentially in strengthening the contractions of the weakly throbbing heart.

In Mendel's *Centralblatt für Nervenleiden* a notice by DR. ESCHLE recently appeared, which emphasizes the efficiency of physostigmine against diarrhoea.

Dr. Eschle has used physostigmine sulph. in a one-half per cent. solution subcutaneously,

in doses of 0.001 to 0.0015 grm., and thereby stopped more or less severe diarrhoea. Larger doses (0.0025 grm.), however, show the known laxative action of physostigmine. Dr. Eschle specially recommends it in cases of dysentery, where it is important to check the bleedings which have such a weakening tendency and the albuminous defecations at least for some time.

SPANISH WINES.

La Vara de Esculapio (August 31, 1886) publishes an exhaustive leading article on the adulteration of wine in Barcelona, and gives an analysis of some "choice" ports :

Not alcohol.....	12.2 per cent.
Extractive.....	9 grammes per litre.
Ley.....	4.60 " " "
Sulphate of potassium.....	2.6 " " "
Alumina.....	0.180 " " "
Bitartrate of potassium.....	Normal.

The alcohol contained amylic spirit in large quantity. The other analyses were similar.

The named Spanish journal deserves every credit for the good work it is doing in exposing quackery and detecting adulteration.

GELOSINE.

According to the Paris correspondent of the *British Medical Journal*, October 9, 1886, at a recent meeting of the Société de Thérapeutique M. GUÉRIN read a paper on gelosine, a mucilaginous substance extracted from a Japanese alga, which is sold in the form of dry whitish leaves. Gelosine is an excellent base, mixing easily with all pharmaceutical substances, soluble in alcohol and water, and in acidulated or alkaline water ; it served as a medium for salts, powders, and different tinctures, and was of great utility in preparing suppositories. Gelosine gradually contracts and expels the water and medicinal substances it contains, which are thus spread over the surface of wounds or cavities in which it is placed in any form. Gelosine thus gradually regains its original volume, but can be used more than once for the purposes cited above. Gelosine, therefore, appeared to be preferable to liniments and ointments. M. Guérin showed specimens of cylinders and slabs of gelosine, containing camphor, creosote, sulphate of zinc, cocaine, tincture of belladonna, iodoform, corrosive sublimate, carbolic acid, and coal-tar. In order to use gelosine as a medium, the quan-

tity required should be immersed in its weight of hot water; the therapeutic agent is then added and incorporated. When the mixture becomes as thick as syrup, it is poured into moulds. These operations were completed in a quarter of an hour, and the expense was slight. Sterilized gelosine might be utilized in bacteriological research.

ANCHIETEA SALUTARIS.

The root of *Anchietea salutaris*, a violaceous plant, having a popular reputation in Brazil as a remedy in skin-diseases, has been recommended as useful in syphilis (*Chemiker Zeitung*, 1886, p. 619). The dose is 0.1 to 0.35 gm. of the powdered root daily, and the drug is also administered in the form of a syrup prepared from a tincture of the root. In consequence of the drug being used for syphilis and provoking a flow of saliva, it shares with some other substances the name of "vegetable mercury." Some years since Dr. PECKOLDT called attention to the usefulness of the drug in skin-affections. He administered the powdered root, commencing with 0.35 to 0.70 gm. three times a day, and gradually increasing the dose.

The first effects are drastic, but these pass off after a day or two. Dr. Peckoldt isolated from the root-bark an alkaloid, which he considered to be the active principle, and named it "ancheitine."

NOTES ON SOME NEW DRUGS.

We abstract the following from *Der Fortschritt*, September 26, 1886:

1. *Ulexine* (seed of *Ulex Europæus*) furnishes an alkaloid called ulexine by Zerrard.

Physiological action: Applied to frogs the drug acts as a paralyzing agent.

Placed upon the tongue the hydrochlorate of ulexine causes anæsthesia, though to a less extent than cocaine.

2. *Cortex Cascara Amarga* (from the West Indies, from which Thompson prepared the alkaloid picramine) is said to be valuable against skin-diseases and syphilis.

3. *Jucaranda Lancifolia*.—In doses of 10 drops of the tincture and of $\frac{1}{3}$ of the extract the drug is claimed as a specific against gonorrhœa and syphilis.

4. *Njimo-Wood* (of West Africa) is regarded by the natives as a remedy against gastric pains and loss of appetite. Like the coca-leaves in Peru, the njimo-wood is used as a stimulant by the negroes.

5. *Radix Aristolochiæ Cymbiferæ* is said to surpass in energy the officinal serpentaria. In Brazil, the home of the plant, the drug is regarded as a sure cure for snake-bite and typhoid fever, and is called "mil homens."

6. *Radix Coca-Coca*.—The Indians in Peru use this drug against liver-affections and muscular colds.

7. *Radix Ping-Ping*.—Prof. Möller examined this drug, and states that it is valuable in vesical troubles.

8. *Radix Tayuga*.—Stated to be of use in syphilis and skin-diseases.

9. *Semen Anda Assn*.—The oil acts like castor oil, but has the advantages of being a finer fluid and acting in smaller doses. Home, Chili.

10. *Semen Huingan*, Chili.—Used as an infusion against urinary affections.

LIATRIS ODORATISSIMA.

A frequent importation into the port of Hamburg during the past year has consisted of the stalks and leaves of the *Liatris odoratissima* (deer's tongue, or southern vanilla), which is said to be employed as a substitute for the more expensive tonka-bean in the scenting of snuffs. MESSRS. JEHE state that the quantity of cumarin in the drug is considerable, but it has never, in their experience, reached the amount mentioned by Wood, of two drachms to the pound.

EXCESSIVE SWEATING OF THE HANDS.

Excessive sweating of the hands is a source of much trouble, especially to dentists, whose hands of all things should be clean and free from the slightest odor. According to the *British Journal of Dental Science*, October 1, 1886, a mixture of salicylic acid or oxide of zinc with acacia powder will prove useful, although often boracic acid in saturated aqueous solution acts very well.

A NEW BITTER.

In a letter to the editor of *La Vos de Hipocrates*, Dr. CRESCENCIO GARCIA recommends a Mexican plant, which is known popularly as "guachacata," as a substitute for quassia, gentian, etc. It yields a bitter principle to alcohol and boiling water. No analysis has been made of the plant, nor is its natural family named, yet the fact that it is largely used speaks evidently in favor of it and invites trials with the drug.—*Med. Press*, October 27, 1886.

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